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Environmental Assessment

Montana Department of Natural
Resources and Conservation

Southwestern Land Office

Clearwater Unit

May 2004

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FINDING

EVANS LAKE TIMBER SALE

An Environmental Analysis (EA) has been completed for the proposed Department of Natural Resources and Conservation (DNRC) Evans Lake Timber Sale. After a thorough review of the EA, project file, public correspondence, Department policies, standards and guidelines, and the State Forest Land Management Plan (SFLMP), I have made the following 3 decisions:

1. ALTERNATIVE SELECTED

Two alternatives are presented and were fully analyzed in the EA: the No-Action Alternative, which includes existing activities, but does not include a timber sale *(EA, page 3)*; The proposed action, which proposes harvesting up to 0.5 million board feet of timber from 200 acres via ground skidding *(EA, page 3)*.

For the following reasons, I have selected the proposed action without additional modifications:

a. In my opinion, the proposed action best meets the purpose and need for action and the specific project objectives listed in the EA on page 1. The proposed action generates more return to the school trust than the no action alternative. The environmental effects of the proposed action are acceptable as compared with the no action alternative. No major losses in habitat, or unacceptable effects to water or soil would occur under the proposed action. No losses in habitat, or unacceptable effects to Threatened, Endangered, or Sensitive species or diurnal raptors would occur under the proposed action. The action alternative would reduce the threat of catastrophic wildfire, promote tree regeneration, decrease the susceptibility of remaining trees to insect and disease infestations, increase tree vigor, and protect the power line right of way.

b. The analysis of identified issues did not reveal information compelling the DNRC not to implement the proposed action.

c. The proposed action includes activities to address environmental concerns expressed by DNRC staff and the public.

2. SIGNIFICANCE OF IMPACTS

For the following reasons, I find that the proposed action would not have significant impacts:

a. Economics.

Currently this section has a grazing lease (L-3865) with the Jacobsen Hereford Ranch. This is the only income currently from this section. The proposed timber sale would return approximately $57,240.00 to the school trusts *(EA page 17)*. This would provide a much larger measure of reasonable and legitimate return for the Common School (C.S.) grant.

b. Site Productivity, Stand Health, and Emulating Pre-Settlement Conditions.

Currently stands of timber within this section are often overstocked with Douglas-fir *(EA page 5)*. Given the lower elevation, past cutting practices (removal of ponderosa pine), habitat types, and charred woody debris it indicates that these stands have experienced wildfire in the past *(EA page 5)*. Some of the silvicultural treatments targeted here are to promote seral (ponderosa pine) regeneration either by planting or naturally *(EA page 6, 7)*. These treatments would open the stand and decrease the ability for a fire to "run", especially through the crowns of the residual trees.

At this time, regeneration within this area is generally Douglas-fir (not the preferred shade intolerant ponderosa pine), or "encroachment" regeneration *(EA page 5)*. General opening of the forest stands, and the favoring of ponderosa pine and western larch should increase the ability to achieve natural regeneration *(EA page 6)*. Some areas will be planted and will use Pronone to allow the seedling to out compete the grass competition *(EA page 6)*.

Under the action alternative, the majority of the largest trees would be retained. Much of the overstocked Douglas-fir would be removed and thickets of ponderosa pine would be thinned. By reducing stand density and creating species composition closer to pre-settlement times, growth and vigor would be expected to increase. Limited resources (light, water, and nutrients) would be more available to remaining trees after harvest *(EA page 6)*. These trees of greater vigor and health would also have a lower risk from insects and disease *(EA page 6)*.

c. Wildlife Concerns.

Within the analysis area of this proposed timber sale, there are two threatened species of animals, the grizzly bear and the bald eagle *(EA page 7)*. Leaving areas that are unharvested (increasing hiding cover) and gating open roads (decreasing grizzly bear and human contact), there would be a low risk of affecting grizzly bears *(EA page*

8, 9). Harvest scheduling during the winter months should decrease the further likelihood of contact *(EA page 9).*

There is a bald eagle nest within one mile of the proposed sale. The Montana Bald Eagle Working Group provides sale direction *(EA page 9).* Proposed silvicultural treatments of the sale should meet all directives *(EA page 9, 10).* Should an active nest be located closer to the sale area, a DNRC biologist would be contacted to determine additional mitigation measurers *(EA page 10).*

There are three Sensitive species that could be affected by this proposed timber sale; the pileated woodpecker, the flammulated owl, and the Columbian sharp-tailed grouse *(Appendix B pages 7-10).*

The proposed silvicultural prescriptions would generally increase the growth and vigor of retained trees (and therefore the size), retain snags and feeding sites, and would not decrease the carpenter ant population (primary pileated food source). These points would all be favorable to the pileated population *(EA page 11).*

The proposed retention of ponderosa pine and planting of the same would eventually increase the amount of pine within this section. Flammulated owls prefer ponderosa pine and Douglas-fir with at least two stories *(Appendix B page 8).* Overall, this project would have a low risk since it would promote the condition favorable to flammulated owls *(Appendix B page 9).*

The Columbian sharp-tailed grouse prefer thickets of birch and aspen separated from conifers *(EA page 12).* The sharp-tailed grouse population in the area generally occupies an area three miles south of the sale area *(EA page 12).* The proposed harvest would not remove enough conifer trees surrounding the aspen groves within the sale area to make them attractive to the Columbian sharp-tailed grouse *(EA page 12).*

Several forest-using raptor species nests were found within the sale area. One nest located north of the highway was determined to be that of a red-tailed hawk *(EA page 13).* Other nests were to be made by the *Accipiter* hawks, probably sharp-shinned or Cooper's hawks *(EA page 13).* In both cases, protecting the nest site, trees around the nest site, season of harvest, and following of the Migratory Bird Treaty Act, potential to impact diurnal birds is minimal *(EA page 13 and 14).*

d. Water Quality and Soil Compaction and Displacement.

There are not any streams within the sale area, a majority of the draws within the sale area are dry but do carry spring runoff. Evans Lake is outside the sale area as is Warren Creek *(EA page 4)* and was not analyzed. No effects were assumed with either

watershed. Wetlands and springs are protected by Streamside Management Zones and there are no roads that would deliver sediment to bodies of water. Some roads would be relocated to decrease any chance of any sediment delivery. There are low risks of impact *(EA page 4)*.

Given that the majority of the soil types in the area are well-drained very gravelly soils it was determined that risk to direct and cumulative impacts would be low *(EA page 3 and 4)*. Given season of operation (winter with frozen conditions) potential for soil erosion, compaction, and displacement are minimal *(EA page 3)*. Springs and wet areas will be marked with equipment restriction areas and all roads showing rutting after harvest would be bladed *(EA page 4)*.

e. Protecting the Integrity of the Power Line Right-of-Way.

The action alternative would remove a majority of trees along the power lines and the adjacent county and private roads within the project area. It will be the responsibility of the sale purchaser to inform MEC (Missoula Electric Cooperative) and have lines dropped if necessary *(EA page 6)*.

3. SHOULD DNRC PREPARE AN ENVIRONMENTAL IMPACT STATEMENT (EIS)?

Based on the following, I find that an EIS does not need to be prepared:

a. The EA adequately addressed the issues identified during project development and displayed the information needed to make the decisions.

b. Evaluation of the potential impacts of the proposed timber sale indicates that no significant impacts would occur.

c. Sufficient opportunities for DNRC staff and public review and comment during project development and analysis were provided. DNRC staff and public concerns were incorporated into project design and analysis of impacts.

Stephen J Wallace

Stephen J. Wallace
Unit Manager
Clearwater Unit
Southwestern Land Office
May 10, 2004

ENVIRONMENTAL ASSESSMENT

Introduction and Overview

Project Name: Evans Lake Timber Sale

Proposed Implementation Date: Summer, 2004 through approximately 2006

Location: Section 36, Township 15 North, Range 12 West, Powell County, Montana (*see figure # A – 1, Vicinity Map*)

Type and Purpose of Action

The Montana Department of Natural Resources and Conservation (DNRC) proposes to harvest an estimated 500 thousand board feet (MBF) of timber from approximately 200 acres. This would include reconstruction of existing road and an estimated .25 miles of new road to access these areas of state trust land. Additionally, an estimated .5 miles of existing road would be improved to BMP (Best Management Practice) standards. Approximately 1.26 miles of open road would be closed. Estimated receipts generated by this proposal would yield between $50,000 and $72,500 for the common schools. The proposed harvest treatments would emulate disturbances caused by natural wildfire events and improve stand health and productivity. Area roads would be treated with herbicide to control noxious weeds. Ponderosa pine and western larch tree seedlings would be planted in suitable areas.

The lands involved in this proposed project are held by the State of Montana in trust for the support of specific beneficiary institutions such as public schools & state colleges (Enabling Act of February 22, 1889; 1972 Montana Constitution, Article X, Section 11). The Board of Land Commissioners and Department of Natural Resources and Conservation (DNRC) are required by law to administer these trust lands to produce the largest measure of reasonable and legitimate return over the long run for these beneficiary institutions (Section 7 –1–202, MCA).

In 1996, the DNRC adopted the State Forest Land Management Plan, (SFLMP) under an Environmental Impact Statement Record of Decision and subsequent approval by the Board of Land Commissioners. The SFLMP outlines the management philosophy for forested State trust lands. This project is conceived and proposed in accordance with the direction provided by the State Forest Land Management Plan.

The objectives of the project are to:

1) Generate revenue for the common schools trust funds,

2) Reduce the threat of catastrophic wildfire by moving the treated stands towards a more desired future condition. These treated stands would begin to emulate pre-settlement (prior to wildfire suppression) stands, or would be one step closer to historic conditions.

3) Promote some tree regeneration both naturally and artificially,

4) Increase residual tree vigor through thinning (commercial and pre-commercial),

5) Protect the integrity of the power line right-of-way.

I. Project Development

1. Public Involvement, Agencies, Groups or Individuals Contacted

Public involvement has been solicited through notices mailed during October of 1999 to interested parties and also involved some personal contacts. Changes have been made to the initial project proposal. These changes include: estimates of harvest volume, distances of new road construction and existing road re-construction, and the anticipated implementation and completion dates. The change to the proposed implementation dates was made due mostly to changes in unit personnel and an elevated urgency to prepare other timber sales elsewhere including insect damaged timber. The change to the proposed harvest volume estimate was made due mostly to availability during the interim of more up-to date stand data. The changes in the distance of new road construction and existing road re-construction were influenced somewhat by an interim decision altering the transportation route for long-term forest management efficiency and to conform to the Montana Best Management Practices and Montana D.N.R.C. guidelines. The over-all scope and intent of the original proposal has remained consistent throughout. (*Reference – Evans Lake Timber Sale Project File, DNRC, Clearwater Unit Office*)

Those who provided input and / or comments during project development include:

DNRC program officials and specialists:

Renee Hanna, *Hydrologist and Soil Scientist*, Mike McGrath, *Wildlife Biologist*, Patrick Rennie, *Archeologist*, Craig V. Nelson, *Project Leader*, Steve Wallace, *Decision Maker*, and various DNRC program officials.

Public:

Gary Jacobsen family, Don McNally family, Wayne McNally family, and Price Williams family (neighboring landowners).

Other interested parties:

Confederated Salish and Kootenai Tribes (Tribal Preservation Office), and The Montana Natural Heritage Program

All comments have been considered during project development. The Department has developed the project in accordance with the State Forest Land Management Plan.

2. Other Governmental Agencies with Jurisdiction

Powell County maintains both the Dry Gulch and North Fork Roads. Under the Endangered Species Act, the U.S. Department of Fish and Wildlife Service manages the Bald Eagle and Grizzly Bear populations. These populations are considered *"threatened"*.

3. Alternatives Considered

No Action Alternative

Wildfires would continue to be suppressed. The harvesting of timber would be deferred at this time. The affects of continuing wildfire suppression and deferring the harvest of timber at this time would allow existing concentrations of ladder fuels and over-stocked stand conditions to continue to increase. This could elevate the potential for catastrophic wildfire. Tree susceptibility to insect attacks and disease outbreaks would continue to increase. Timber stand health and productivity would likely not be improved with the selection of this alternative. No revenue would be generated from the sale of forest products at this time. Existing populations of noxious weeds would continue to spread on drier habitats *(Attachment C Issue 1.53 Increase in the Spread of Noxious Weeds as a Result of Harvest)*. Livestock grazing would continue under grazing license L-3865 (*Jacobsen Hereford Ranch*). Wildlife and wildlife habitat would see little to no changes as long as wildfires are excluded.

Action Alternative

Wildfires would continue to be suppressed. An estimated 500 thousand board feet (MBF) of timber would be harvested from approximately 200 acres. The proposed harvest treatments would emulate disturbances caused by natural wildfire events and increase stand health and productivity. Long-term plans of this harvest are to begin the change back to the ponderosa pine stands of pre-settlement times. An estimated $50,000 to $72,500 would be generated for the common schools trust from the sale of forest products. An estimated 0.25 miles of new road would be constructed to BMP standards in section 36 Township 15 North, Range 12 West. Additionally, an estimated .5 miles of existing road would be improved to BMP standards. Area roads would be treated with herbicide to control noxious weeds. Logging slash would be treated through such means as excavator piling and lopping and scattering. Landing logging slash could be treated by burning, or be sold as pulp or "hogfuel". Western larch and ponderosa pine tree seedlings would be planted. Pre-commercial thinning would occur in heavily stocked stands of encroachment ponderosa pine. Livestock grazing would continue under grazing license L-3865 (*Jacobsen Hereford Ranch*).

II. Impacts on the Physical Environment

4. Geology and Soil Quality, Stability and Moisture

The project area is located on glacial outwash topography with low to moderate slopes of varied soil types. The soils in the project area are a combination of Perma Stony Loam 15-35% slopes, Wildgen Cool-Yreka Warm Gravelly Loams, 2-8% and 8-25% slopes, Hoyt Loams 15-35% slopes, Quigley-Straw Water Complex 8-25% slopes and Shawmut-Winspect Water Complex 2-8 and 8-25% slopes. These soils are well-drained very gravelly loams to silt loam textures with limited areas of somewhat poorly drained salty, clay loam soils associated with the pothole lakes in this section.

No Action Alternative

Under the No Action Alternative there would be no potential for direct, indirect or cumulative effects to soil compaction or displacement.

Action Alternative

Under the Action Alternative the risk to direct, indirect and cumulative effects would be low. The primary risks to long-term soil productivity are compaction and displacement of surface soils by equipment operation and road construction. During timber harvest, equipment operations on wet sites and sensitive soils can result in soil compaction, rutting, displacement and erosion. Potential effects are a reduction in long-term soil productivity, regeneration potential, as well as impacts to course woody debris distribution and nutrient cycling.

To reduce the risk of compaction and displacement, the general period of logging operation would be limited to winter activities (frozen ground and/or sufficient snow accumulation of 12-18"), when ground conditions are less susceptible to compaction and displacement. Springs and wet areas will be marked as equipment restriction areas. Sensitive soils that remain wet late into the spring will have a shorter season of use. The Forest Officer prior to any harvest operations would approve the skid trail plan and design. There will be no skidding across draws, except those designated trails that have been approved by the Forest Officer as part of the skid trail plan and design. Any rutting on the road that may occur during harvest operations would be bladed after harvest operations are completed.

5. Water Quality, Quantity and Distribution

Watershed - Existing Conditions

The Evans Lake timber sale is located in Section 36, T15N, R12W. The project area is situated on glacial outwash topography with low to moderate slopes of 0-45%. The draws within the project area are dry draws with no defined stream channel, but do carry some ephemeral flow during spring runoff. The project area contains several pothole wetlands that retain water during spring runoff and wet periods. There are two ephemeral springs in the SE ¼ of the NE ¼ of the project area, one in the NE ¼ of the SW ¼ of Section 36. The pothole wetlands and springs dry up in the summer, however, during wet periods and rain events they do have potential to hold water.

Warren Creek runs through the NW ¼ of the NW ¼, but the harvest units are all located outside the Warren Creek watershed. Evans Lake is located in the SW ¼ of the SW ¼, but outside the project area.

There has been previous harvest in the analysis area during the early 1980's, however, signs of these activities are minimal. Existing road miles within the project area are moderate with approximately 3.5 miles in Section 36. Approximately half of these road miles are two-track roads, which are vegetated, but have limited drainage features. There is limited rutting on the road surface and some collection of water in low spots as a result of spring runoff was observed. There is no evidence of direct delivery of sediment to any of the ephemeral springs or pothole wetland areas. There is an existing two-track road in NW ¼ of the SW ¼ of the section that runs along the wetland. This road has a limited vegetative buffer, however, no direct delivery of sediment was observed.

No Action Alternative

Under the No Action Alternative no direct, indirect or cumulative effects would occur.

Action Alternative

Under the Action Alternative direct, indirect and cumulative impacts would be minimal. The proposed project would have little or no effect on water yield, only slightly departing from natural conditions. There will be sufficient canopy cover remaining, consisting of live trees occupying the site, allowing for interception and infiltration, resulting in limited potential for increased water yields and off site delivery. There are two wetland areas and three springs located in the project area that will be protected by equipment restriction zones and a sufficient vegetated filtration buffer to minimize impacts to water quality.

Existing roads in the proposed project were evaluated by a DNRC Hydrologist for past and potential impacts. Some roads in the project area do not meet BMP standards and lack sufficient drainage features. Approximately .25 miles of new road would be constructed and .50 miles of road would be improved to meet BMP standards, which would require drain dip installation in specified sections of road. There are no roads in the project area that directly deliver sediment to any body of water.

The proposed .25 miles of new road construction is located in the SW ¼ of section 36. This new road would eliminate the use of the existing road, which is located approximately 10-20 ft from the wetland area. The old road would be slashed to prevent use and add an additional sediment filtration buffer.

(*See attachment C, Watershed and Soils Report,*).

6. Air Quality

Federal, state and local agencies enforce rules for open, controlled burning. Air quality is analyzed by estimating emissions from prescribed burns. The air quality analysis area for the proposed action is located in Montana Airshed 3B. The Montana Airshed Group is responsible for determining both air shed number and impact zones. The project area is not located in any of the impact zones. Given the vicinity of Highway 200 and distance to neighbors, smoke concerns are very high.

Should excavator piling and burning be used, burning would be done after a "Prescribed Fire Burn Plan" has been done for the area. Should pulp or "hog fuel" harvest be used to decrease the fuel hazard, there would not be any further documents needed.

No Action

This alternative would not create impacts to air quality beyond existing levels.

Action

The post harvest burning of logging debris would produce particulate matter. All burning would be conducted at times of adequate ventilation and within existing rules, plans, and regulations.

Cumulative Effects
Cumulative effects to air quality would not exceed the levels defined by State of Montana Cooperative Smoke Management Plan (1988) and managed by the Montana Airshed Group. Prescribed burning by other nearby airshed cooperators (for example Plum Creek Timber Company) would have potential to affect air quality. All cooperators currently operate under the same Airshed Group guidelines. The State, as a member, would burn only on approved days. This should decrease the likelihood of additive cumulative effects.

7. Vegetation Cover, Quantity and Quality

No rare plants or cover types listed by the Montana Natural Heritage Program have been identified within the project area. Timber harvesting and pre-commercial thinning under the proposed action alternative would alter current stand structures, species composition, and stocking. Silvicultural treatments proposed under the action alternative including tree planting would ensure adequate regeneration following harvest.

Analysis Area

The analysis area for vegetation cover and quality includes all of sections 36, Township 15 North, Range 12 West and adjacent lands within 1 mile of these sections.

Existing Stand Conditions

Conditions in section 36 are the result of both natural and man-caused disturbances. Habitat types, local wildfire history, and the presence of charred, woody debris suggest stands within this section experienced a regular wildfire interval at varying intensities and severities. Additionally, most stands in the section were selectively harvested in the early 1950's (1951 – 1952) and again in 1983. During both of these entries, much of the large ponderosa pine was removed. Stands now consist of a higher than acceptable level of Douglas-fir. Douglas-fir will reproduce successfully with higher shade level (referred to as *shade tolerant).* The combination of removal of ponderosa pine and the increased shade and stocking levels, decrease the chance for *shade intolerant* (trees that prefer full sunlight such as ponderosa pine or western larch) species to regenerate. Many of the oldest members of the stands are weakening and are showing the stresses of high stocking levels, as are the younger members of the stand in the understory. This is most visibly evident from tree form characteristics and leader growth. Endemic populations of mountain pine beetle exist in most stands. While these populations currently pose no eminent threat of widespread damage to the stands, increasing tree vigor would reduce susceptibility in the future.

This section is classified as a grazing section. There is approximately 200 acres of forest of the total 480 acres within the section. The remainder is grassland, wetland, and hardwood. Currently stand structures within the section vary in stocking. Some areas are more open (10 – 30 sq. ft. of basal area per acre) other areas are heavily stocked (260 – 280 sq. ft. of basal area per acre). The stands are primarily Douglas-fir and ponderosa pine with small amounts of Engelmann spruce and western larch. Some areas of the section are beginning to be populated by "encroachment" regeneration. This is generally ponderosa pine "encroaching" onto the prairie. These patches of regeneration show a high amount of animal damage and would include areas to be pre-commercially thinned. Other areas that contain regeneration under the overstory show signs (such as shorter leader growth) of experiencing decreased vigor through a closed overstory canopy and over-stocking.

No Action Alternative

Existing concentrations of ladder fuels and over-stocked stand conditions would continue to increase. Under this alternative, conditions contributing to decreased growth and vigor of trees would continue. It is expected regeneration of shade tolerant species (Douglas-fir) would continue. This process would move stands further away from the "appropriate conditions" that existed during pre-settlement times and increase the potential threat of catastrophic wildfire. The over-stocked stand conditions would be the susceptible to insect and disease outbreaks. Douglas-fir would continue to regenerate within forested areas. Without a grazing lessee, existing populations of noxious weeds would continue to spread on drier habitats *(Attachment C Issue 1.53 Increase in the Spread of Noxious Weeds as a Result of Harvest)*. Livestock grazing would continue under grazing license L-3865 (*Jacobsen Hereford Ranch)*. Trees along the power line to the McNally residence and down the Dry Gulch Road would not be harvested and the risk of windthrow damage would increase over time.

Action Alternative

Several stands would be treated with three primary silvicultural goals. The dominant type of harvest would be to create openings and approximate the effect of mixed severity fires, where ponderosa pine would generally have survived. This would begin to look more like pre-settlement stands in the area. Ponderosa pine would become a more prominent tree after harvest. These newly created openings should assist ponderosa pine to regenerate or to allow planted seedlings to survive. Some of these areas have a competitive understory of grass. Small spots within these stands would be treated with Pronone (*Hexazanone*) to allow planted ponderosa pine seedlings to take root and become established. Pronone will kill the grass cover, where applied in the immediate area surrounding the seedling, for a few growing seasons. After the chemical has lost its efficacy, grass will begin to grow on that site. In areas where harvesting disturbance provides for seed germination and sufficient sunlight, favorable seral regeneration would be expected to establish.

Other portions of the harvest area would more closely be likened to a thinning or a "cleaning" of the stand. The damage caused by the wet June snow of 2001, has left many trees without tops. Some areas are beginning to be visited by both Mountain Pine Beetle *Dentroctonus ponderosae* and the Pine Engraver *Ips pini.* Generally these areas have basal areas of over 120 square feet of basal area per acre. So far, this section has only been lightly affected by the Douglas-fir Beetle *Dendroctonus pseudotsugae,* although beetle populations within the general area have increased in the past several years. By thinning stands with high basal areas, vigor and insect resistance should increase. Overall, the remaining stand structure (residual trees and their spacing) would be similar to a stand that has experienced a light mixed severity fire or a non-lethal fire. Areas where harvesting disturbance provides for seed germination and sufficient sunlight, some favorable regeneration would be expected to establish, however, regeneration would not be a primary goal of this treatment.

The last type of treatment is found near Dry Gulch Road and Highway 200, and on the road to the McNally Ranch. In this treatment, trees would be marked to cut (signified by a different color of paint) that could endanger power lines and/or human travel. It would be the responsibility of the purchaser to contact MEC (Missoula Electric Cooperative) to possibly have lines shut off and dropped to assist with removal of the trees. Regeneration would not be a primary goal of this treatment.

Timber removal in all areas would be accomplished using tractor skidding methods. Residual tree growth would be expected to enhance stand health, and promote increased future revenue generating capacity. Sound snags that pose no obvious safety hazard would be left to maintain certain wildlife habitat.

Provisions would be made for the following activities after harvesting these stands:

* Ensuring adequate site preparation (such as excavator piling and burning slash and reducing shrub competition) is completed.

* Planting ponderosa pine and western larch seedlings would be made in an effort to continue DNRC's direction toward pre-settlement stands.

* Pre-commercial thinning in heavily stocked areas of non-commercial sized trees to help promote existing seral species.

These activities would be accomplished during appropriate conditions following harvest. Adjacent un-harvested areas would continue to represent the vicinities with heavier stocking common to most wildfire and other disturbance events. A licensed professional would apply herbicide (2, 4, D and Tordon) according to label directions. This would be done to most roads and landing areas in the project area to help control the spread of noxious weeds

Cumulative Effects
Private ranches manage most of the adjacent lands within one mile of the project area. Some of the adjacent lands also support livestock grazing. Other adjacent lands are managed by federal agencies. These lands in general, are lightly forested and have had little to no timber harvesting. It is anticipated these activities would continue into the foreseeable future.

Potential negative cumulative effects to vegetation cover and quantity would be mitigated through selective harvest practices, responsible reforestation techniques, and weed control measures. The stands to be treated under the action alternative do not meet the Green et al. (1992) definition of old growth and therefore, pose no risk of cumulative effects to old growth.

8. Terrestrial, Avian and Aquatic Life Habitats

Appropriate measures would be taken to mitigate potential, adverse affects of the proposed action on terrestrial, avian and aquatic life habitats.

A wildlife analysis was conducted for a variety of terrestrial and avian species and associated habitats. Wildlife species that drove the development of the action alternative were grizzly Bears and bald eagles (both federally threatened), and diurnal raptors.

(For further information on terrestrial and avian wildlife, see Attachment B, Wildlife Analysis)

9. Unique, Endangered, Fragile or Limited Environmental Resources

No Threatened, Endangered or Sensitive plant species have been identified within the project area. Missoula Phlox *Phlox kelseyi* var. *missoulensis* has been recorded in section 7 Township 14 North, Range 11 West. This plant has been recorded on an open east facing slope north of Kleinschmidt Lake.

Grizzly Bears and Bald Eagles (classified as threatened) have some potential to be affected under the action alternative.

Grizzly Bears – Grizzly bears are the largest terrestrial predators in North America, feasting upon deer, rodents, fish, roots and berries, as well as a wide assortment of vegetation (Hewitt and Robbins 1996). Depending upon climate, abundance of food, and cover distribution, home ranges for male grizzly bears in northwest Montana can range from 60 - 500 mi^2 (Waller and Mace 1997). The search for food drives grizzly bear movement, with bears moving from low elevations in spring to higher elevations in fall, as fruits ripen throughout the year. However, in their pursuit of food, grizzly bears can be negatively impacted through open roads (Kasworm and Manley 1990). Such impacts are manifested through habitat avoidance, poaching, and vehicle collisions.

The project area is approximately 4.5 miles south of the Northern Continental Divide Ecosystem. For the past few years, grizzly bears have been observed repeatedly between the Jacobsen Ranch, adjacent to the project area on the east, and Ovando, to the west (J. Jonkel, MT FWP, pers. comm., April 2003). Thus, there is potential for grizzly bears to use the affected School Trust parcel. As such, grizzly bears can be affected by increases in open road densities and creation of large forest openings that increase a bear's vulnerability to human conflict. Ownership for a 5-mile radius surrounding the affected School Trust parcel (97.7 mi^2 or 62,515 acres; hereafter, the cumulative effects analysis area) is summarized in Table 1. Within the same area, there are approximately 138 miles of open road, for an open road density of approximately 1.41 miles of open road per square mile (simple linear calculation, using DNRC road layer dated 4 December 2002). There are approximately 240 miles of road in total within this area, for a total road density of 2.45 miles of road per square mile (simple linear calculation). Within the project area (483 acres), there are approximately 3.47 miles of road, all of which are currently unregulated, for an open road density of 4.6 miles of open road per square mile (simple linear calculation).

Table 1. Land ownership for a 5 mile radius (97.7 mi^2) surrounding the affected School Trust parcel in section 36, T15N, R12W.

Landowner	**Acreage**
Private	40,036
Plum Creek Timber Company	10,943
Montana Fish, Wildlife & Parks	3,857
DNRC	3,121
U. S. Fish and Wildlife Service	2,847
Water	1,437
BLM	156
USFS	118
Total	62,515

No Action Alternative

Direct and Indirect Effects

With no action, there would be no change from current conditions and access roads would not be gated and closed. Thus, there would be low risk of direct or indirect effects to grizzly bears as a result of this alternative.

Cumulative Effects

With no action, there would be no change from current conditions and open road density within a 5-mile radius of the project area would remain at approximately 1.41 miles of open road per square mile (simple linear calculation). Thus, there would be low risk of cumulative effects to grizzly bears as a result of this alternative.

Action Alternative

Direct and Indirect Effects

The proposed action would gate and lock 1.26 miles of road within the project area that would reduce open road density within the parcel from 4.6 miles of open road per square mile to 2.93 miles of open road per square mile (simple linear calculation), a 36% reduction in open road densities. Because Highway 200 runs through the project area, the proposed action would leave a visual screen along both sides of the highway that would be both aesthetically pleasing to passing motorists and provide cover for grizzly bears that may be in close proximity to the road. On the north side of the highway, the visual buffer along the proposed harvest units would leave approximately 85 ft^2 of basal area per acre, out of the 130 ft^2 per acre that is currently present within a buffer ranging from 100 to 330 feet off of the highway. Along the south side of the highway, the visual buffer along the proposed harvest units would leave approximately 85 ft^2 of basal area per acre, out of the 115 ft^2 per acre that is currently present within a buffer ranging from 80 to 250 feet off of the highway. Additionally, trees along the county road, west of the proposed West harvest unit (unit 36-06), that would not be harvested under the proposed action would provide hiding cover and visual screening from the county road for grizzly bears until they are harvested under a future action. As the proposed action alternative would take place during the grizzly bear denning period, human and grizzly contact would be reduced. With the aforementioned mitigations, the Action Alternative would reduce open road densities, provided vegetative screening along Highway

200 and the county road, and reduce the likelihood of direct disturbance through implementation of a winter (i.e., denning season) harvest. Thus, there would be low risk of direct and indirect effects to grizzly bears as a result of the Action Alternative.

Cumulative Effects
The Action Alternative, through gating and locking 1.26 miles of road, would reduce open road densities from 1.41 to 1.4 miles of open road per square mile (simple linear calculation) within a five mile radius of state land. Many of the >40,000 acres of private land within the cumulative effects analysis area have livestock, which can be an attractant for grizzly bears. Additionally, the nearly 11,000 acres of industrial timber ground have been logged in recent years and now provide an abundant supply of huckleberries, snowberries, and the like. All of which are preferred grizzly bear food items (Hewitt and Robbins 1996). Thus, with the abundant food to the north, and the lush riparian areas along the North Fork Blackfoot River and streams that drain into it, grizzly bears have ample reason to be in and around the project area. Through the mitigations listed in Direct and Indirect Effects, the Action Alternative would still maintain visual screening and hiding cover for grizzly bears along Highway 200 as well as riparian areas within the project area. Thus, there would be low risk of cumulative effects to grizzly bears as a result of the Action Alternative.

Bald Eagles - Bald eagles typically nest and roost in large diameter trees within 1 mile of open water. They are sensitive to a variety of human caused disturbances, ranging from residential activities to resource use and heavy equipment operation, among others (Montana Bald Eagle Working Group 1994). Bald eagle response to such activities may range from spatial and temporal avoidance of disturbance activities to total reproductive failure and abandonment of breeding areas (MBEWG 1994). While foraging, they typically perch within 500 m of shoreline habitat (Mersmann 1989); and roost in trees ranging in diameter from 12 to 39 inches and 49 to 200 feet in height (Stalmaster 1987) that are generally associated with aquatic foraging habitat. However, roost trees are located away from houses and roads throughout their range (Buehler 2000).

The affected School Trust parcel is located approximately 0.5 miles from the North Fork Blackfoot River. One bald eagle nest is located approximately 0.75 miles northeast of the project area (section 30, T15N, R11W). The nest is located within 1 mile of both the North Fork Blackfoot River and Doney Lake, with several smaller potholes and open meadows dispersed throughout a 2.5 mile (4 km) radius of the nest, including the project area.

No Action Alternative

Direct and Indirect Effects
With no action, there would be no change from current conditions. Thus, there would be low risk of direct or indirect effects to bald eagles as a result of this alternative.

Cumulative Effects
With no action, there would be no change from current conditions. Thus, there would be low risk of cumulative effects to bald eagles as a result of this alternative.

Action Alternative

Direct and Indirect Effects
The project area is located within a 2.5 mile radius home range (MBEWG 1994) of a bald eagle nest. Within this area, the Montana Bald Eagle Management Plan requires that: (1) human activities be designed and regulated to minimize disturbance and conflicts with bald eagle key use areas; (2) cumulative effects from human activity should not decrease habitat suitability; and, among others, (3) habitat alterations be designed to ensure that prey base and important habitat components be maintained or enhanced. The proposed action would conduct a winter harvest for uneven-aged management of many of the proposed harvest units, whereby timber volume would be harvested from all age classes, while retaining representatives of all age classes. As a result, (1) the proposed harvest would minimize disturbance and conflicts with breeding season use of the area by bald eagles through harvest timing; (2)

the proposed uneven-aged management would retain vegetative screening; and (3) important habitat attributes (e.g., perch trees) for bald eagles would be retained. Should an active bald eagle nest be located closer to the project area, a DNRC wildlife biologist would be contacted to determine additional mitigation measures. Due to the proposed action's uneven-aged management, harvest timing, and minimal effects that would likely occur to bald eagle habitat, there would be a low risk of direct and indirect effects to bald eagles as a result of the proposed action alternative.

Cumulative Effects
The project area was previously harvested between 1981 and 1983 under the Dry Gulch Timber Sale, in which 462 MBF were commercially thinned to release ponderosa pine and Douglas-fir in the 6 to 18 inch diameter class. Since the Dry Gulch Timber Sale, trees on the affected School Trust parcel have responded favorably to the treatment and produced suitable bald eagle perch trees throughout the parcel. The proposed action would harvest 500 MBF from many of the same stands that were entered during the Dry Gulch T.S.. The silvicultural intent is to commercially thin some stands, thin all age classes in others, or converting ponderosa pine-Douglas-fir stands back to ponderosa pine stands. Irregardless of the thinning method in the proposed action, many of the perch trees and much of the vegetative screening produced as a result of the Dry Gulch T. S. would be retained post-harvest. As a result, there would be low risk of cumulative effects to bald eagles as a result of the proposed action alternative.

Pileated Woodpecker - The pileated woodpecker is one of the largest woodpeckers in North America (15-19 inches in length), feeding primarily on carpenter ants (*Camponotus* spp.) and woodboring beetle larvae (Bull and Jackson 1995). The pileated woodpecker nests and roosts in larger diameter snags, typically in mature to old-growth forest stands (McClelland et al. 1979, Bull et al. 1992). Due primarily to its large size, pileated woodpeckers require nest snags averaging 29 inches dbh, but have been known to nest in snags as small as 15 inches dbh in Montana (McClelland 1979). Pairs of pileated woodpeckers excavate 2-3 snags for potential nesting sites each year (Bull and Jackson 1995). Snags used for roosting are slightly smaller, averaging 27 inches dbh (Bull et al. 1992). Overall, McClelland (1979) found pileated woodpeckers to nest and roost primarily in western larch, ponderosa pine, and black cottonwood. The primary prey of pileated woodpeckers, carpenter ants, tend to prefer western larch logs with a large end diameter greater than 20 inches (Torgersen and Bull 1995). Thus, pileated woodpeckers generally prefer western larch and ponderosa pine snags > 15 inches dbh for nesting and roosting, and would likely feed on downed larch logs with a large end diameter greater than 20 inches.

Within the 495 acre School Trust parcel, there are approximately 232 acres of forested land (e.g., mixed conifer, aspen) capable of providing pileated woodpecker habitat. The remaining area contains grassland and Evans Lake. Of the forested lands in the project area, the stands that are most conducive to pileated woodpecker habitat are located in the NE1/4 NE1/4 SW1/4 and W1/2 SW1/4 due to the presence of larger diameter (>18 inches dbh) ponderosa pine (former), and recently created, and abundant (>3 snags per acre), broken top snags from a June 2001 snowfall (latter). Forested stands within the project area largely occur as isolated patches, with two stands connecting to more contiguous forest to the northeast of the project area. Thus, pileated woodpecker habitat within the project area consists of isolated patches relative to the larger landscape (a 1-mile radius; 5,766 acres).

No Action Alternative

Direct and Indirect Effects
With no action, there would be no change from current conditions. Trees would continue to grow, albeit at a slower rate due to competition from other trees. As a result, achieving greater numbers of ≥18 inch dbh snags would take longer than in a thinned stand. There would be low risk of direct or indirect effects to pileated woodpeckers as a result of this alternative.

Cumulative Effects
With no action, there would be no change from current conditions. The Dry Gulch Timber Sale from the early 1980's thinned out stand conditions to promote a faster growth rate for the affected stands post-harvest. As a result of the Dry Gulch T. S., remnant ponderosa pine were able to attain diameters suitable for pileated woodpecker use faster than if the parcel had not been commercially thinned. Under

the No Action Alternative, trees that have achieved suitable size for use by pileated woodpeckers may die and become suitable snags at a faster rate due to an increased likelihood of stand replacing fire from unthinned Douglas-fir. Thus, there would be low risk of cumulative effects to pileated woodpeckers as a result of this alternative.

Action Alternative

Direct and Indirect Effects
The proposed action would commercially thin or selectively harvest 500 MBF from 200 acres; uneven-aged management, overstory removal, or more traditional thinning would be employed, depending upon the proposed harvest unit. Resulting stand conditions would be more open, allowing for increased growth rates for remaining trees. In all but the northeast (36-01) harvest unit, larger diameter ponderosa pine would be left that could serve as potential foraging and nesting sites, as well as potential large downed wood recruits in 75 to 125 years. The proposed action would reduce stocking levels, which would reduce the affected stands' susceptibility to insect infestation and a potential future food source for pileated woodpeckers. However, the proposed action would retain sufficient large diameter trees and would likely have low impact on local carpenter ant populations (a primary pileated woodpecker food source; (Torgersen and Bull 1995). Thus, there would be low risk of direct and indirect effects to pileated woodpeckers as a result of the Action Alternative.

Cumulative Effects
The Dry Gulch Timber Sale, from 1981 to 1983, commercially thinned 462 MBF from the project area, and subsequently released the remaining trees that ranged in diameter from 6 to 18 inches dbh. The previous action created the stand that currently exists and contains many ponderosa pine ≥15 inches dbh, which are preferred nesting and foraging trees for pileated woodpeckers. With the exception of the proposed 8 acre harvest unit in the northeast (36-01), many large diameter ponderosa pine would be retained in the proposed action. Additionally, where safety permits, many of the broken top snags created during the June 2001 snowfall would be retained and serve as potential foraging sites.

Within the 5,766 acre cumulative effects analysis area (a 1-mile radius surrounding the project area), the majority of the land (69%; 3,977 ac) is prairie, with the bulk of the forested land being located in sections 30 and 31, T15N R11W, and section 25, T15N R12W. From a landscape perspective, the forested portions of the project area are fragmented from the main forested patch in the aforementioned sections, existing in a matrix dominated by prairie. As such, the project area is more likely to serve as potential foraging habitat for pileated woodpeckers than as core nesting habitat (i.e., large, unfragmented forested patches). Thus, with retention of the recently created broken top snags, and larger diameter ponderosa pine throughout many of the proposed harvest units, there is low risk of cumulative effects to pileated woodpeckers as a result of the Action Alternative.

Columbian Sharp-tailed Grouse -The Columbian sharp-tailed grouse is a prairie species whose diet encompasses a variety of vegetative material (Giesen and Connelly 1993, Deeble 1996). In spring and summer, adult diets include creeping barberry, common dandelion, sagebrush buttercup, bluegrasses (*Poa* spp.), bromes, and other grass seeds and leaves, as well as insects. Fall diets are comprised of a higher proportion of insects and agricultural crops. Winter diets are comprised of fruits and buds of chokecherries, serviceberries, hawthorns, snowberries, aspens, willows, birches, and wild roses (Giesen and Connelly 1993, Deeble 1996). One of two known populations of Columbian sharp-tailed grouse is known to reside in the vicinity south and west of Kleinschmidt and Browns Lakes, which are located approximately 3 miles southeast of the project area. The nearest known lek, or breeding display ground, is located approximately 3 miles south of the project area. Giesen and Connelly (1993), in a summation of previous research, indicated that most nests are located within approximately 3 km (1.9 miles) of the lek, with most females nesting within 1 mile of the lek where they were trapped. During summer, 90% of most male and female locations are within 1.6 miles of the lek where they were captured (Giesen and Connelly 1993). In previous surveys of this population's leks, displaying males numbered as many as 5. However, during the last lek survey in 2000, only 1 displaying male was observed at the Browns Lake lek (B. Deeble, National Wildlife Federation, pers. comm. May 2003).

Perhaps more important to Columbian sharp-tailed grouse survival than breeding habitat is wintering habitat. This species is generally associated with deciduous trees and shrubs in upland and riparian areas during the winter (Giesen and Connelly 1993). Columbian sharp-tailed grouse may move more than 3 miles to find suitable food and cover, with movements <12 miles having been observed elsewhere. For winter survival, Columbian sharp-tailed grouse will travel to riparian areas containing thickets of birch and aspen for both food and cover. However, such thickets that are in close proximity to conifers may not be considered high quality wintering habitat due to the possibility of predation from avian predators (B. Deeble, National Wildlife Federation, pers. comm., May 2003). Historically, grouse from this population have been known to winter on U. S. Fish and Wildlife Service land east of Browns Lake (B. Deeble, National Wildlife Federation, pers. comm., May 2003).

Given that harvest would not remove large amounts of timber around aspen clumps, Columbian sharp-tailed grouse would not prefer them. Therefore, there would be low risk of direct and indirect effects to this species as a result of the proposed action alternative. With the availability of other habitat in closer proximity to their breeding grounds near Browns Lake, there would be low risk of cumulative effects as a result of the Action Alternative.

Diurnal Raptors - Several forest-using raptor species occur in the area, including bald eagles (previously described), Cooper's hawks, northern goshawks, merlin, northern harriers, and red-tailed hawks (Montana Natural Heritage Database). During field work, 4 potential raptor nests were discovered, one north of Highway 200 (36-02), and three in the SW1/4 of the section and south of the highway (36-05).

The nest north of the highway is placed prominently, 53 feet up in the fork of a 23 inch dbh ponderosa pine. The nest tree is located within 100 feet of natural prairie and is relatively unshaded. Based on the nest tree's location and the amount of sunlight the nest receives, the nest was likely created by a red-tailed hawk.

Red-tailed hawks are a bird of relatively open country, with an extremely wide tolerance for habitat variation. Summer habitat for both sexes is centered around upland forest and grass-dominated cover types. Preferred breeding forested habitats are typically those with open rather than closed forest structures; nests are selectively placed near the edges of dense stands (Johnsgard 1990). Red-tailed hawks favor patches of forest and grass dominated areas, forest edges, open forest, and savanna-like areas with scattered tall trees. Prey generally consist of rabbits and hares, ground squirrels, mice, and game birds (Johnsgard 1990).

The 3 nests located south of the highway are all located within 700 feet of each other, largely in small clumps of 7 to 12 inch dbh Douglas-fir or aspen. The nests are located in forks of each nest tree, and consist of small diameter sticks. Based on the nest locations and composition, they were likely created by either Sharp-shinned or Cooper's hawks.

Sharp-shinned and Cooper's hawks are both members of the *Accipiter* family. As such, they both possess short, rounded wings and long tails for high maneuverability in a forested environment. The *Accipiter* family is known for its construction of multiple, alternate nests within the nesting area (Reynolds , Reynolds et al. 1982, Reynolds 1988), and nest placement at the base of the live tree canopy. For food, sharp-shinned hawks prey largely on songbirds and small rodents, such as mice. Cooper's hawks will prey on songbirds, woodpeckers, and pine or red squirrels. Both *Accipiters* nest and forage in the forested environment (Johnsgard 1990).

Red-tailed Hawk

No Action Alternative

Direct and Indirect Effects
Under the no action alternative, there would be no change from current conditions. Thus, there would be low risk of direct or indirect effects to this species as a result of this alternative.

Cumulative Effects
With no action, there would be no change from current conditions. Thus, there would be low risk of cumulative effects to this species as a result of this alternative.

Action Alternative

Direct and Indirect Effects
Red-tailed hawks are sensitive to human disturbance during the breeding season and are known to change their home ranges to accommodate the disturbance (Andersen et al. 1990). The proposed action would not create disturbance around the suspected red-tailed hawk nest during the breeding season because a winter harvest would be a requirement of the sale. Although this species is known to nest in open country (Andersen et al. 1990, Johnsgard 1990), the proposed action would retain the nest tree as well as ≥6 larger diameter ponderosa pine and Douglas-fir that are in close proximity to the nest tree, to serve as screening cover and perch trees for future fledglings. Because red-tailed hawks have a wide tolerance for habitat variation (Johnsgard 1990), proposed harvest timing, and the aforementioned mitigations, there would be low risk of direct and indirect effects to red-tailed hawks as a result of the Action Alternative. Additionally, through the proposed harvest timing and mitigations, the Action Alternative would avoid conflicts with protections afforded this species under the Migratory Bird Treaty Act because the proposed harvest would not occur when the species is likely to be present, and the nest tree would be retained.

Cumulative Effects
The Dry Gulch Timber Sale from the early 1980's likely assisted with the circumstances that produced a suitable site in which red-tailed hawks could nest. Through the prior action, tree densities were reduced. This resulted in trees growing at a more rapid rate and attaining the size that would be desirable for nesting. This also created the forest structure that enabled red-tailed hawks to gain access to some forest-dwelling prey, as well as their open-country prey. The proposed action may have some short-term (5 to 10 years) reductions in available (i.e., accessible and abundant) forest-dwelling prey, such as pine squirrels; however, due to the red-tailed hawk's broad niche and wide prey base, prey from the surrounding prairie lands would likely supplement potential decreases in forest prey. Thus, there would be low risk of cumulative effects from the Action Alternative to red-tailed hawks.

Accipiter hawks

No Action Alternative

Direct and Indirect Effects
Under the no action alternative, there would be no change from current conditions. Thus, there would be low risk of direct or indirect effects to this species as a result of this alternative.

Cumulative Effects
With no action, there would be no change from current conditions. Thus, there would be low risk of cumulative effects to this species as a result of this alternative.

Action Alternative

Direct and Indirect Effects
Both sharp-shinned and Cooper's hawks are highly maneuverable, forest-dwelling raptors that use ambush hunting techniques to obtain prey (Reynolds , Johnsgard 1990). As such, the proposed action would reduce tree densities within the project area. For these *Accipiters*, who use their maneuverability as an advantage to obtain prey, the stand density reductions could potentially affect their ability to obtain avian prey. Additionally, there may be temporary reductions (5 to 10 years) in prey, such as song birds, while understory vegetation recovers from the proposed action. However, bird species associated with Evans Lake and the potholes that are scattered throughout the project area would likely be unaffected by the proposed action.

The landscape surrounding the three affected nests would not see increases in habitat fragmentation as a result of the proposed action; however, resulting stand structures would likely affect the overall landscape nesting suitability for sharp-shinned and Cooper's hawks (after McGrath et al. *in press*). For the largest of the three North American *Accipiters*, northern goshawks appear to prefer specific stand structures (after (Oliver and Larson 1996) at varying distances to their nests. Cooper's and sharp-shinned hawks may have similar habitat affinities when selecting their nest sites. McGrath et al. (*in press*) postulated that the associated stand structures and landscape compositions may relate to predation avoidance, prey availability, and nesting microclimate. Through commercially thinning the landscape surrounding the affected nests, the Action Alternative would at least temporarily (approximately 10 to 15 years) alter the stand structures that may affect predation rates, prey availability, and nesting microclimate for these species. To partially mitigate for microclimatic changes surrounding the nests, stand structures within approximately 0.1 acre surrounding each nest would not be altered at this time, thus retaining the naturally clumpy tree distribution surrounding the nest structures. Given the mitigations surrounding the nest trees, there would still be temporary (approximately 10 to 15 years) low to moderate risk of direct and indirect effects to *Accipiter* hawks as a result of the alterations to stand structures in the surrounding landscape, as proposed in the Action Alternative.

Cumulative Effects
Cooper's and sharp-shinned hawks are generally associated with forested habitats, with home ranges typically <1000 acres (Johnsgard 1990). Looking at the forest distribution within the larger landscape (Fig. 1), the affected nests are likely near the southern end of the breeding pair's home range, assuming nearly exclusive forest use by the pair. Based on forest distribution, the affected nesting pair would likely utilize the forested area within the project area, but also that to the north, south, and east, on Plum Creek and private lands. As described in Direct and Indirect Effects, the proposed action could temporarily alter stand structures at a landscape level that would effect this landscape's suitability for nesting by sharp-shinned or Cooper's hawks. Such effects may cause temporary abandonment of the territory by the pair, or may cause the pair to relocate to a nearby location. The Dry Gulch Timber Sale of the early 1980's likely had similar effects if this territory were occupied at that time. Actions such as those in the 1980's and the proposed action likely simulate the effects of natural fire in the landscape. As fire pulses through the landscape periodically over time, suitable nesting habitat is temporarily made unsuitable. This dynamic would occur across the landscape, causing spatial shifting of suitable nesting habitat and a temporary displacement of breeding pairs (McComb et al. 2002). Thus, while the proposed action would likely reduce a limited area's nesting suitability for sharp-shinned and Cooper's hawks, the effect would be temporary in nature, as evidenced by the similar action in the Dry Gulch Timber Sale. Therefore, the Action Alternative would have a low to moderate risk of cumulative effects for *Accipiter* hawks, with the moderate risk level being associated with individual birds.

10. Historical and Archeological Sites

A DNRC Archeologist conducted an onsite inspection of the sale area, and did not identify any cultural resources. Additionally, the Archeologist consulted with the State Historical Preservation Office (SHPO) during research on section 36, Township 15 North, Range 12 West. The Confederated Salish and Kootenai

Tribes were scoped and have requested that all cambium removal "scarred" trees be preserved. *(Reference - Patrick Rennie Memos, Evans Lake Timber Sale Project File DNRC, Clearwater Unit Office)*

11. Aesthetics

Proposed harvest units are located on and within geographical features common to the area. Due to screens of cover left behind (around small bodies of water and wetland sites near the highway), and unit placement using topography to help hide portions of the sale from view, much of the sale will remain hidden from view. Some areas will use the smaller size classes of trees (sub-merchantable) to block the view into harvest units. Other areas that are adjacent to Highway 200 or to the county roads in the area will be marked with a very thin band of paint to decrease the contrast of the paint used (generally blue) with the woodland setting. Timber harvest will generate "slash" or unusable portions of the tree. Slash can dominate the viewing, especially in the foreground. As it ages, it will change to a reddish color that will contrast with the greens, grays, and browns of the forest setting. Where excavator piling would take place, the difference would be lessened and take less time to look like the natural setting again. Potential negative impacts associated with this harvest on aesthetics would be relatively short-term, as reforestation and growth would be expected to decrease these impacts over time.

12. Demands on Environmental Resources of Land, Water Air or Energy

The proposed action would not use resources that are limited in the area. Other activities nearby are not expected to affect the project. No cumulative impacts are likely to occur as a result of this action.

13. Other Environmental Documents Pertinent to the Area

Also taken in to account were proposals for the Lost Bear, Headquarters, Dry Creek Helicopter Salvage and Haywire Wallace Timber Sales. Additionally, the potential Upper Blackfoot Reciprocal Access Agreement, and the land exchange with the Jacobsen family, and the State Grazing License L-3865 *(Jacobsen Hereford Ranch)* have associated environmental documents, which were referenced during project development. A land exchange between the Montana DNRC and the Jacobsen Family has also been completed prior to this package being released.

III. Impacts on the Human Population

14. Human Health and Safety

Log truck traffic would increase slightly on area roads for the duration of the proposed action. Signs at appropriate locations on county roads and access roads would be used to warn motorists and local residents.

15. Industrial, Commercial and Agricultural Activities and Production

The proposed action would lead to a temporary increase in activity during implementation. The proposed action would include timber harvesting, log hauling, and associated forest improvement actions.

16. Quantity and Distribution of Employment

A few seasonal jobs in the local area may be created for the duration of the proposed action.

17. Local and State Tax Base Revenues

The proposed action has only indirect, limited implications for tax collections.

18. Demand for Government Services

Aside from contract administration, the impact on government services should be minimal due to the temporary nature of the proposed action.

19. Locally Adopted Environmental Plans and Goals

In 1996, DNRC began a phased-in implementation of the State Forest Land Management Plan (SFLMP). The SFLMP established the agency's philosophy for the management of forested trust lands. The management direction provided in the SFLMP comprises the framework within which specific project planning and activities take place. The SFLMP philosophy is incorporated in the design of the proposed action.

20. Access to and Quality of Recreational and Wilderness Activities

The project area receives use by walk-in recreationists. Recreation opportunities would continue under the proposed action

21. Density and Distribution of Population and Housing

The project has no direct implications for density and distribution of population and housing.

22. Social Structures and Mores

The proposed action has no direct implications for social structures and mores.

23. Cultural Uniqueness and Diversity

The proposed project has no direct implications for cultural uniqueness and diversity.

24. Other appropriate Social and Economic Circumstances

Primary costs and benefits of the proposed action may be summarized as follows:

Road Work

New road construction (.25 miles) consisting of excavating a road prism and providing surface drainage as well as re-construction of existing roads (1.26 miles) consisting of blading, gating, and improving surface drainage would be done.

Reforestation

Current plans estimate the total reforestation costs assumed by DNRC to be approximately $7,228.00 based on current average market costs for tree planting ($200.00 / acre X 25 acres), pre-commercial thinning ($200.00 / acre X 10 acres), and slash pile burning ($12.00 / acre X 19 acres). Other additional associated reforestation costs like slash treatment would be assumed by the timber sale purchaser.

Timber harvest

The estimated stumpage is based on a residual value analysis. Under this alternative money would be generated for the School Trusts. For the benefit of the economic analysis it will be assumed that 500 MBF, or 500 thousand board feet of sawlog material, would be harvested. Current delivered log prices (logs delivered to the mill) average out to be approximately $340 per MBF. From this amount we would need to subtract the cost of harvesting (felling, processing, skidding, loading, and hauling). For the benefit of this analysis that cost is assumed to be $150 per MBF. This residual value of $190 per MBF is referred to as stumpage. Multiplying $190 per MBF and the expected volume of sawlogs (500 MBF) we arrive at a gross stumpage for sawlog material of $95,000.00.

The amount of forest improvement collections from this sale would be $47.70 per MBF. This would be applied to the sawlog volume harvested. The forest improvement collections would be approximately $23,850.00. This money would be deposited in the forest improvement fund to be used for thinning, prescribed burning, planting, weed management, etc. on Trust lands. This would leave us with a new remainder of $71,150.00.

From this amount the cost of road construction and improvements must be subtracted. The proposed road construction would be 0.25 miles. The average price per mile of roads within the Clearwater Unit is around $13,000 per mile. Multiplying the miles of road proposed and the average price per mile equals $3,250.00. Assuming approximately $1,000 in improvements (gates, drainage, etc.) this would become $4,250.00. This would leave us with a new remainder of $66,900.00. From this dollar amount, we must subtract the cost of forest improvement figured earlier. The new amount would leave us with $59,620.00 and is the approximate amount of money deposited in the School Trust.

The permanent road constructed by this proposed sale would improve access for management for the next entry and would be an investment. The proposed action should result in greater growth rates and higher volumes. The proposed action alternative would also decrease the risk of stand replacement wildfire, ensuring that the trees within project area would retain a high value. The decreased risk of large wildfire would also decrease the risk to surrounding areas providing a cumulative benefit.

Should pulp, houselogs, or "hogfuel" be sold, they may increase the money returned to the DNRC. These are not to be included as a requirement for the timber sale, and would only be considered an option. As a result, the potential money benefits for the DNRC have not been changed.

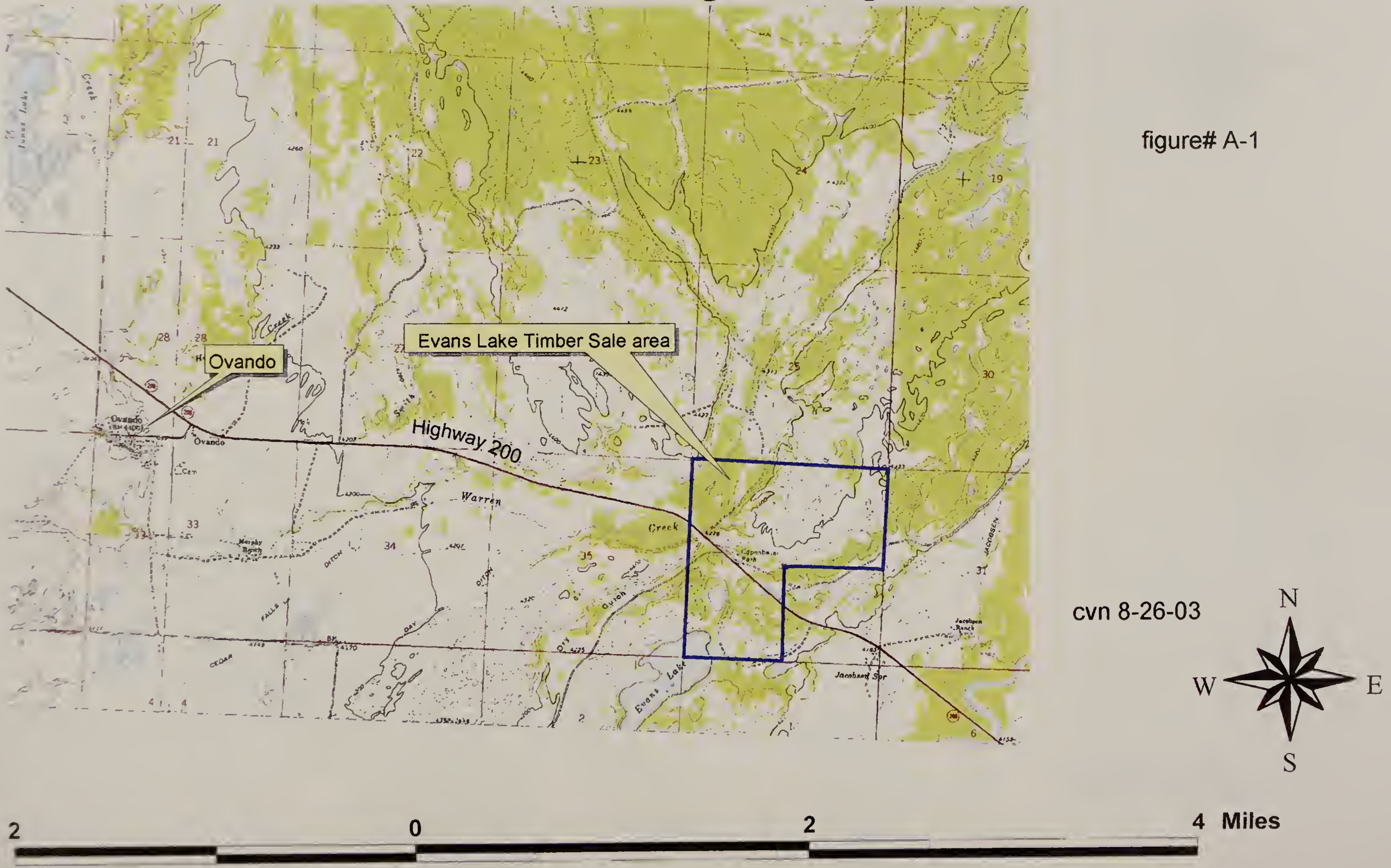
If this proposed project was implemented, it would provide work for a road building contractor, a logging contractor, their subcontractors, and their employees. The forest products would most likely be processed local mills providing further job opportunities.

ATTACHMENT A

MAPS

Evans Lake Timber Sale
Vicinity Map

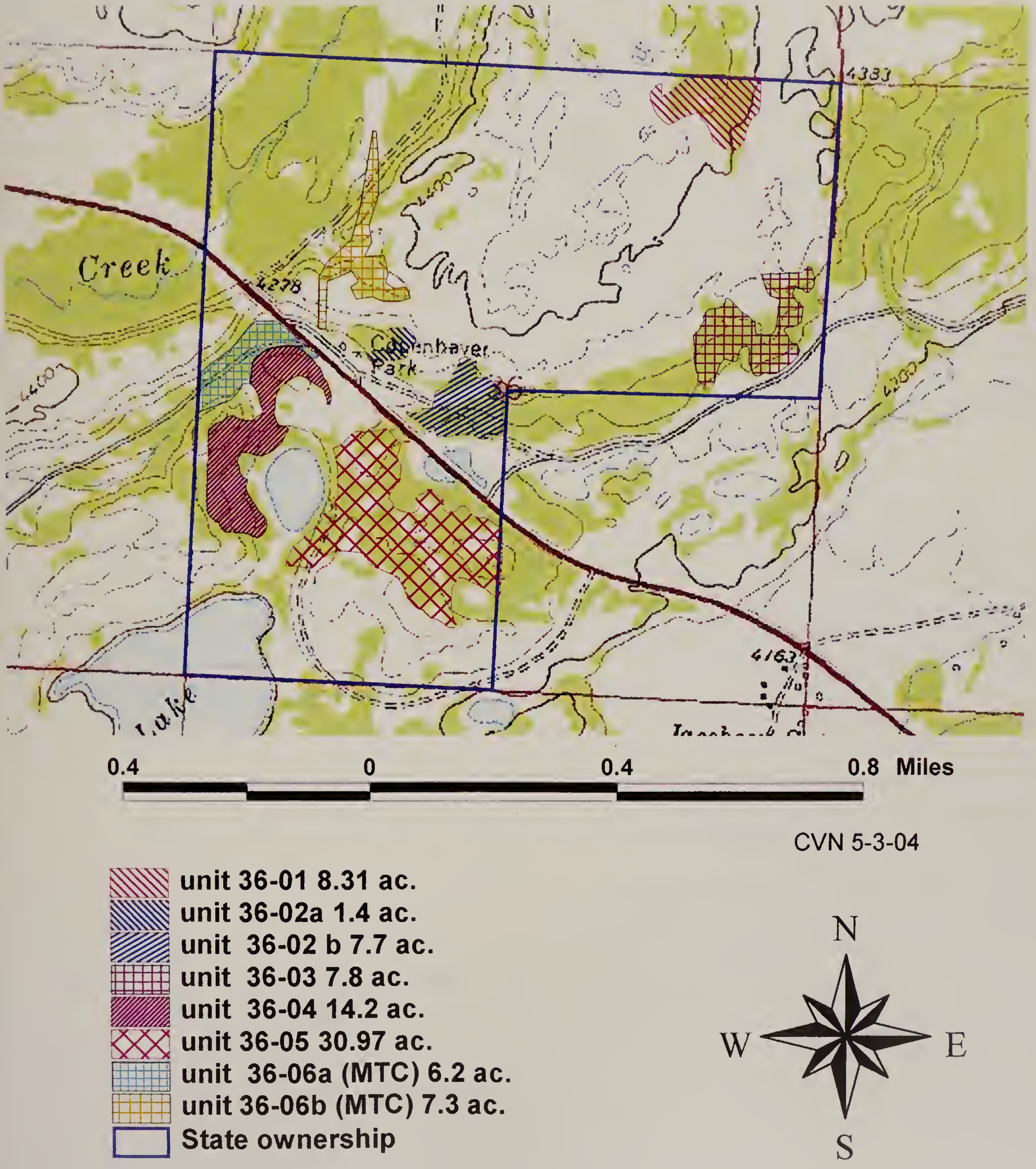
figure# A-1



cvn 8-26-03

EVANS LAKE TIMBER SALE

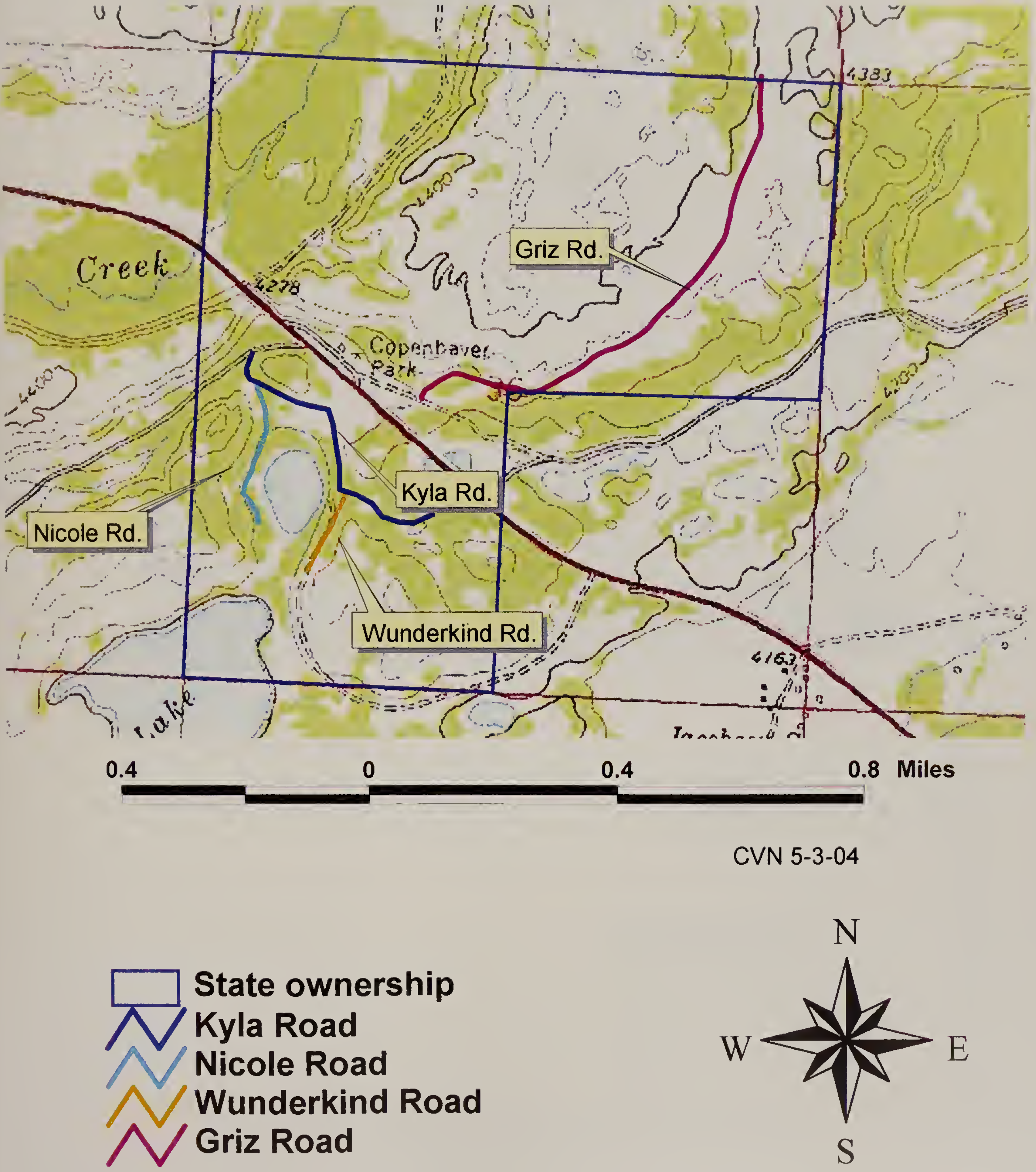
figure# A-2



CVN 5-3-04

Evans Lake Timber Sale

figure # A-3



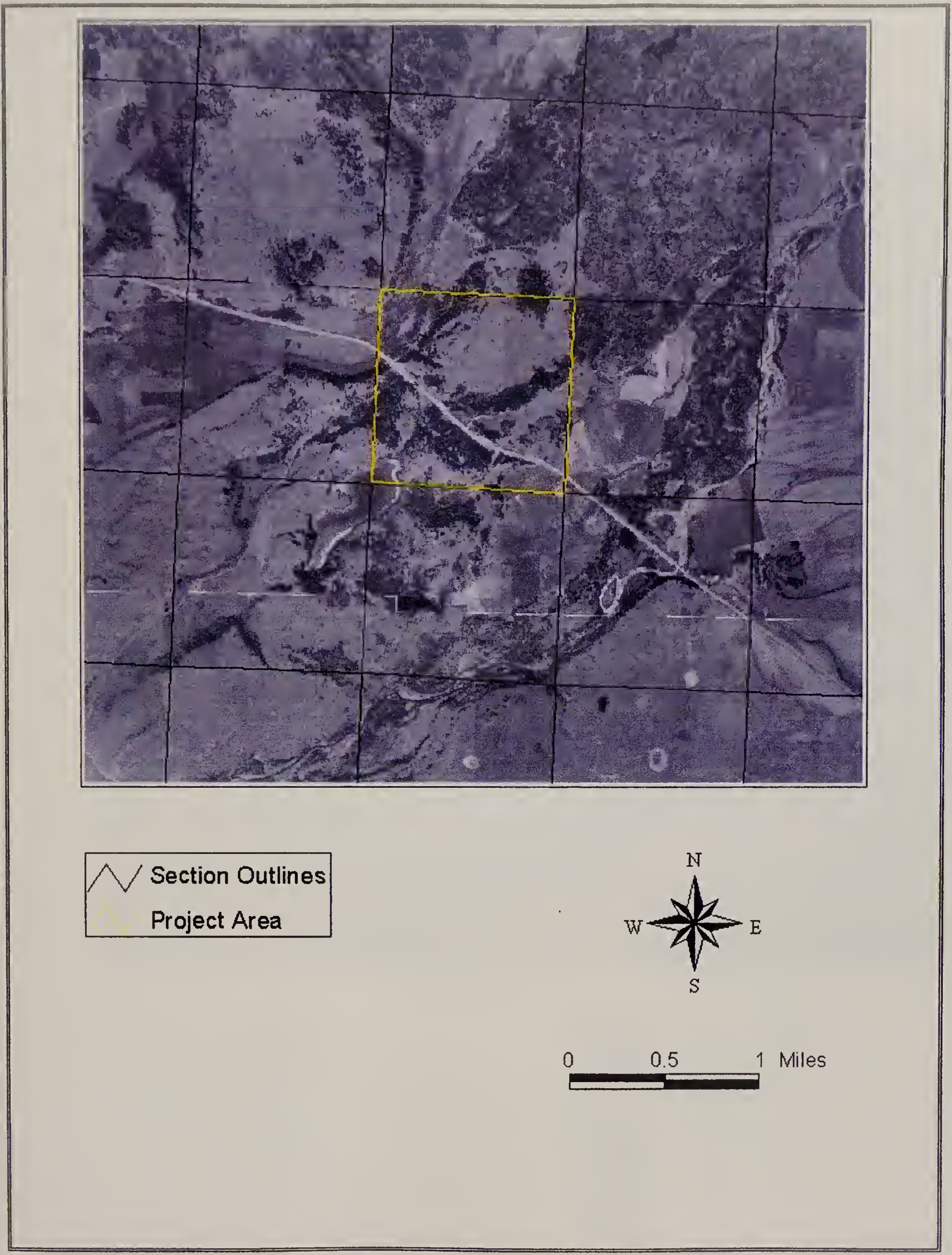
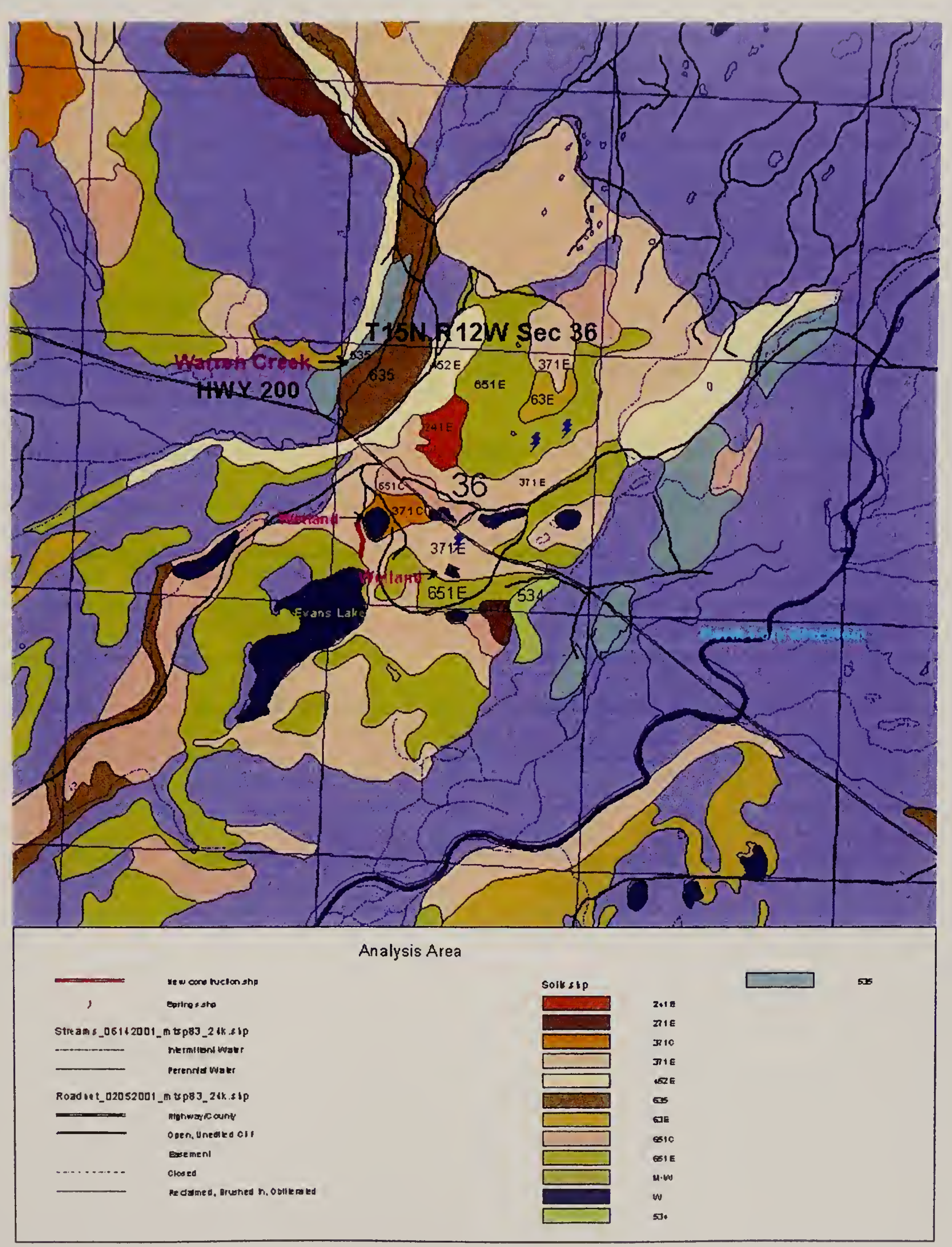


Figure # A-4 Forested area surrounding the proposed Evans Lake Timber Sale

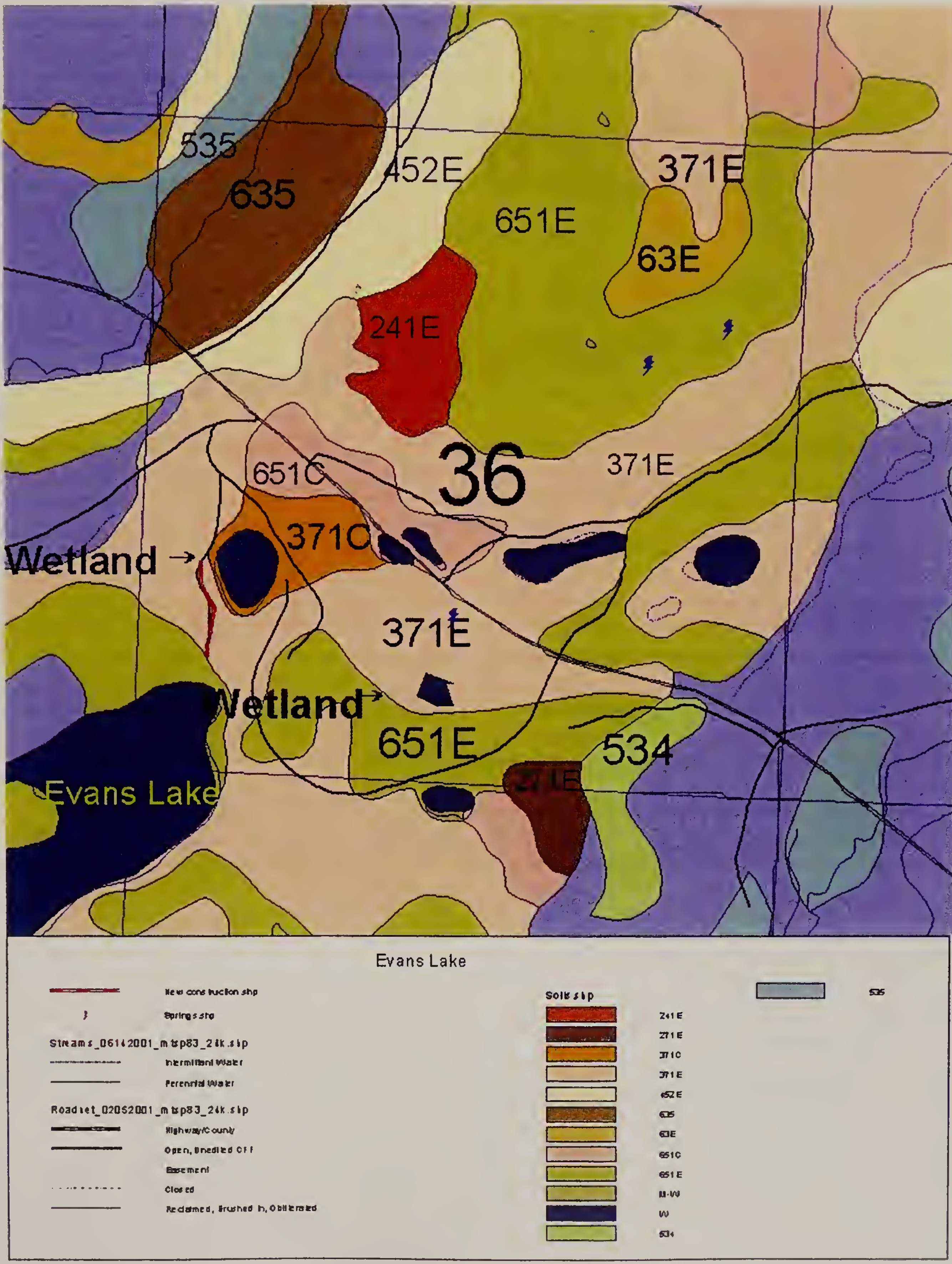
Proposed Evans Lake T.S.
Soils Vicinity Map

Figure # A-5



Proposed Evans Lake T.S.
Sale Area Soil Map

Figure # A-6



ATTACHMENT B

WILDLIFE

ANALYSIS

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Evans Lake Timber Sale Wildlife Analysis

Chapter 1 -- Purpose of the Project

1.5 Issues and Concerns

1.5.4 The proposed action may negatively impact Threatened and Endangered species.
1.5.5 The proposed action may negatively impact Sensitive species.
1.5.6 The proposed action may negatively impact diurnal raptors.

Chapter 3 – Affected Environment

3.2 General Description of Area

3.2.2 Wildlife

3.2.2.1 Threatened and Endangered Species (Issue 1.5.4)

Bald Eagle (Federally threatened)
Bald eagles typically nest and roost in large diameter trees within 1 mile of open water. They are sensitive to a variety of human caused disturbances, ranging from residential activities to resource use and heavy equipment operation, among others (Montana Bald Eagle Working Group 1994). Bald eagle response to such activities may range from spatial and temporal avoidance of disturbance activities to total reproductive failure and abandonment of breeding areas (MBEWG 1994). While foraging, they typically perch within 500 m of shoreline habitat (Mersmann 1989); and roost in trees ranging in diameter from 12 to 39 inches and 49 to 200 feet in height (Stalmaster 1987) that are generally associated with aquatic foraging habitat. However, roost trees are located away from houses and roads throughout their range (Buehler 2000).

The affected School Trust parcel is located approximately 0.5 miles from the North Fork Blackfoot River. One bald eagle nest is located approximately 0.75 miles northeast of the project area (section 30, T15N, R11W). The nest is located within 1 mile of both the North Fork Blackfoot River and Doney Lake, with several smaller potholes and open meadows dispersed throughout a 2.5 mile (4 km) radius of the nest, including the project area.

Grizzly Bear (Federally threatened)
Grizzly bears are the largest terrestrial predators in North America, feasting upon deer, rodents, fish, roots and berries, as well as a wide assortment of vegetation (Hewitt and Robbins 1996). Depending upon climate, abundance of food, and cover distribution, home ranges for male grizzly bears in northwest Montana can range from 60 - 500 mi^2 (Waller and Mace 1997). The search for food drives grizzly bear movement, with bears moving from low elevations in spring to higher elevations in fall, as fruits ripen throughout the year. However, in their pursuit of food, grizzly bears can be negatively impacted through open roads (Kasworm and Manley 1990). Such impacts are manifested through habitat avoidance, poaching, and vehicle collisions.

The project area is approximately 4.5 miles south of the Northern Continental Divide Ecosystem. For the past few years, grizzly bears have been observed repeatedly between the Jacobsen Ranch, adjacent to the project area on the east, and Ovando, to the west (J. Jonkel, MT FWP, pers. comm., April 2003). Thus, there is potential for grizzly bears to use the affected School Trust parcel. As such, grizzly bears can be affected by increases in open road densities and creation of large forest openings that increase a bear's vulnerability to human conflict. Ownership for a 5-mile radius surrounding the affected School Trust parcel (97.7 mi^2 or 62,517 acres; hereafter, the cumulative effects analysis area) is summarized in Table 1. Within the same area, there are approximately 138 miles of open road, for an open road density of approximately 1.41 miles of open road per square mile (simple linear calculation, using DNRC road layer dated 4 December 2002). There are approximately 240 miles of road in total within this area, for a total road density of 2.45 miles of road per square mile (simple linear calculation). Within the project area (483 acres), there are approximately 3.47 miles of road, all of which are currently unregulated, for an open road density of 4.6 miles of open road per square mile (simple linear calculation).

Table 1. Land ownership for a 5 mile radius (97.7 mi^2) surrounding the affected School Trust parcel in section 36, T15N, R12W.

Landowner	Acreage
Private	40,036
Plum Creek Timber Company	10,943
Montana Fish, Wildlife & Parks	3,857
DNRC	3,121
U. S. Fish and Wildlife Service	2,847
Water	1,437
BLM	156
USFS	118
Total	62,515

Gray Wolf (Federally threatened)
Wolves were recently classified as threatened in Montana under the Endangered Species Act. Cover, and road and prey densities likely have some influence on wolves. Currently, there are approximately 1.41 miles of open road per square mile (simple linear calculation) within a 5-mile radius of the affected School Trust parcel. Wolf activity in the area is associated with three groups of wolves: two groups located approximately 13 miles and 20 miles southwest, and one group approximately 28 miles southeast of the project area (U. S. Fish and Wildlife Service 2002). White-tailed deer, and occasionally elk, are known to use the area. Because of the distance between the project area and these three groups' known activity centers, analysis of effects to this species will not be evaluated further. However, should an active wolf den be located within 1 mile of the project area, or a rendezvous site be observed within 0.5 miles of mechanized activities, operations would be temporarily suspended once wolves are known to have vacated the site or it has been determined that resumption of activities would no present conflicts with wolf use.

Lynx (Federally threatened)
Lynx are currently classified as Federally threatened under the Endangered Species Act. In North America, lynx distribution and abundance is strongly correlated with snowshoe hares, their primary prey. Consequently, lynx foraging habitat follows the predominant snowshoe hare habitat, early- to mid-successional lodgepole pine, subalpine fir, and Engelmann spruce forest (Ruediger et al. 2000). For denning sites, the primary component appears to be large woody debris, in the form of either down logs or root wads (Koehler 1990, Squires and Laurion 2000, Mowat et al. 2000). These den sites may be located in regenerating stands that are >20 years post-disturbance, or in mature conifer stands (Koehler 1990, Ruediger et al. 2000).

Within the project area, elevations range from 4,100 to 4,400 feet, and habitat types (Pfister et al. 1977) preferred by lynx (e.g., subalpine fir, Engelmann spruce, and lodgepole pine; (Ruediger et al. 2000)) are absent. Due to the absence of preferred lynx habitat, the likelihood of direct, indirect, or cumulative effects from either alternative are low. Thus, this species will not be analyzed further.

3.2.2.2 Sensitive Species (Issue 1.5.5)

Peregrine Falcon (recently de-listed from Federally threatened)
Peregrine falcons are associated with tall cliffs and concentrations of waterfowl. Potential peregrine habitat generally includes cliff faces at least 164 feet tall, and cliffs approximately 11 miles west of the analysis area (in section 35, T15N, R14W) meet this criteria. However, the nearest known peregrine falcon nests are located approximately 38 miles southwest, and 40 miles northwest of the project area (Montana Natural

Heritage Database). Due to the distance involved, it is unlikely that direct, indirect, or cumulative effects would occur to this species as a result of the proposed action. This species will not be considered further in this analysis.

Pileated Woodpecker
The pileated woodpecker is one of the largest woodpeckers in North America (15-19 inches in length), feeding primarily on carpenter ants (*Camponotus* spp.) and woodboring beetle larvae (Bull and Jackson 1995). The pileated woodpecker nests and roosts in larger diameter snags, typically in mature to old-growth forest stands (McClelland et al. 1979, Bull et al. 1992). Due primarily to its large size, pileated woodpeckers require nest snags averaging 29 inches dbh, but have been known to nest in snags as small as 15 inches dbh in Montana (McClelland 1979). Pairs of pileated woodpeckers excavate 2-3 snags for potential nesting sites each year (Bull and Jackson 1995). Snags used for roosting are slightly smaller, averaging 27 inches dbh (Bull et al. 1992). Overall, McClelland (1979) found pileated woodpeckers to nest and roost primarily in western larch, ponderosa pine, and black cottonwood. The primary prey of pileated woodpeckers, carpenter ants, tend to prefer western larch logs with a large end diameter greater than 20 inches (Torgersen and Bull 1995). Thus, pileated woodpeckers generally prefer western larch and ponderosa pine snags > 15 inches dbh for nesting and roosting, and would likely feed on downed larch logs with a large end diameter greater than 20 inches.

Within the 495 acre School Trust parcel, there are approximately 232 acres of forested land (e.g., mixed conifer, aspen) capable of providing pileated woodpecker habitat. The remaining area contains grassland and Evans Lake. Of the forested lands in the project area, the stands that are most conducive to pileated woodpecker habitat are located in the NE1/4 NE1/4 SW1/4 and W1/2 SW1/4 due to the presence of larger diameter (>18 inches dbh) ponderosa pine (former), and recently created, and abundant (>3 snags per acre), broken top snags from a June 2001 snowfall (latter). Forested stands within the project area largely occur as isolated patches, with two stands connecting to more contiguous forest to the northeast of the project area. Thus, pileated woodpecker habitat within the project area consists of isolated patches relative to the larger landscape (a 1-mile radius; 5,766 acres).

Black-backed Woodpecker

The black-backed woodpecker is an irruptive species that forages opportunistically on outbreaks of wood boring beetles primarily in recently burned habitats, and to a lesser degree in unburned habitats. It is also considered to be a sensitive species in Montana. Although the black-backed woodpecker's nesting and foraging requirements are thought to be tightly linked with burned areas, it does nest and forage in unburned forest in response to insect outbreaks (Bull et al. 1986, Hutto 1995). In 2000 and 2001 several large fires (>40 acres) occurred in and along the Scapegoat and Bob Marshall Wilderness boundaries to the north (approximately 6 miles). With the abundance of black-backed woodpecker habitat available to the north and the relative health of the project area (i.e., a lack of large numbers of forest insects), both alternatives would likely have low risk of direct, indirect, or cumulative effects to black-backed woodpeckers. Thus, this species will not be analyzed further.

Flammulated Owl
The flammulated owl is a tiny forest owl that inhabits warm-dry ponderosa pine and cool-dry Douglas-fir forests in the western United States and is a secondary cavity nester. Nest trees in 2 Oregon studies were 22-28 inches dbh (McCallum 1994). Habitats used have open to moderate canopy closure (30 to 50%) with at least 2 canopy layers, and are often adjacent to small clearings. It subsists primarily on insects and is considered a sensitive species in Montana. Approximately 173 acres of potential flammulated owl habitat occurs within the project area and approximately 1,789 acres within the cumulative effects analysis area (a 1-mile radius surrounding the project area). Flammulated owls have not been reported within the ¼ latilong (15D; Montana Bird Distribution Database).

Fisher
The fisher is a medium-sized animal belonging to the weasel family. Fishers prefer dense, lowland spruce-fir forests with high canopy closure, and avoid forests with little overhead cover and open areas (Coulter 1966, Powell 1977, Kelly 1977, Clem 1977, Powell 1978). For resting and denning, fishers typically use hollow trees, logs and stumps, brush piles, and holes in the ground (Coulter 1966, Powell 1977). A 4-acre stand of

preferred fisher habitat (spruce/twinflower) occurs along an access road in the W1/2 of the W1/2 of the section. The patch of preferred fisher habitat is surrounded by open grassland, and largely isolated from other preferred fisher habitat types. Thus, due to the isolated nature of this habitat, and the low likelihood of use by fisher, both alternatives would likely have low risk of direct, indirect, or cumulative effects to fisher. This species will not be analyzed further.

Townsend's Big-eared Bat
Townsend's big-eared bats require caves, caverns, or old mines, habitat attributes that do not occur within the project and analysis areas (1-mile radius surrounding the project area), for roosting. As a result, the occurrence of this species is unlikely, and the risk of direct, indirect, or cumulative effects is low to this species from the proposed action. Thus, this species will not be considered further in this analysis.

Other Sensitive Species

Coeur d'Alene Salamander-This species requires waterfall spray zones, talus, or cascading streams. There are no known areas of talus, waterfalls, or splash zones within the analysis area. No known occurrences within the analysis area. Thus, no impacts to this species would be expected to occur as a result of either alternative.

Columbian Sharp-tailed Grouse-The Columbian sharp-tailed grouse is a prairie species whose diet encompasses a variety of vegetative material (Giesen and Connelly 1993, Deeble 1996). In spring and summer, adult diets include creeping barberry, common dandelion, sagebrush buttercup, bluegrasses (*Poa* spp.), bromes, and other grass seeds and leaves, as well as insects. Fall diets are comprised of a higher proportion of insects and agricultural crops. Winter diets are comprised of fruits and buds of chokecherries, serviceberries, hawthorns, snowberries, aspens, willows, birches, and wild roses (Giesen and Connelly 1993, Deeble 1996). One of two known populations of Columbian sharp-tailed grouse is known to reside in the vicinity south and west of Kleinschmidt and Browns Lakes, which are located approximately 3 miles southeast of the project area. The nearest known lek, or breeding display ground, is located approximately 3 miles south of the project area. Giesen and Connelly (1993), in a summation of previous research, indicated that most nests are located within approximately 3 km (1.9 miles) of the lek, with most females nesting within 1 mile of the lek where they were trapped. During summer, 90% of most male and female locations are within 1.6 miles of the lek where they were captured (Giesen and Connelly 1993). In previous surveys of this population's leks, displaying males numbered as many as 5. However, during the last lek survey in 2000, only 1 displaying male was observed at the Browns Lake lek (B. Deeble, National Wildlife Federation, pers. comm. May 2003).

Perhaps more important to Columbian sharp-tailed grouse survival than breeding habitat is wintering habitat. This species is generally associated with deciduous trees and shrubs in upland and riparian areas during the winter (Giesen and Connelly 1993). Columbian sharp-tailed grouse may move more than 3 miles to find suitable food and cover, with movements <12 miles having been observed elsewhere. For winter survival, Columbian sharp-tailed grouse will travel to riparian areas containing thickets of birch and aspen for both food and cover. However, such thickets that are in close proximity to conifers may not be considered high quality wintering habitat due to the possibility of predation from avian predators (B. Deeble, National Wildlife Federation, pers. comm., May 2003). Historically, grouse from this population have been known to winter on U. S. Fish and Wildlife Service land east of Browns Lake (B. Deeble, National Wildlife Federation, pers. comm., May 2003).

Common Loon-The common loon is a fish-eating bird that breeds and nests on lakes and ponds. Evans Lake, which occurs in the SW corner of the project area, is an alkaline lake that would not provide suitable habitat for loons due to the lake's basic and salty nature. Thus, no impacts to this species would be expected to occur as a result of either alternative.

Harlequin Duck-Harlequin ducks require white-water streams with boulder and cobble substrates for nesting and breeding. This species has been known to breed in this latilong (15D, Montana Natural Heritage Database). Potential habitat exists along the North Fork Blackfoot River as it flows through section 31, T15N, R11W, which is located approximately 1 mile east of the project area. Neither alternative would likely affect water quality, and subsequently harlequin duck habitat, because they are located outside of the Warren Creek watershed that flows into the North Fork Blackfoot River (see 3.2.1.1 Water Quality). Thus, the potential for direct, indirect, and cumulative effects to harlequin ducks is low, and this species will not be analyzed further.

Northern Bog Lemming-The northern bog lemming inhabits sphagnum meadows, bogs or fens with thick moss mats. No preferred habitat occurs in the project area. Thus, there is no potential for effects to this species from either alternative.

Mountain Plover-The mountain plover inhabits short-grass prairie, alkaline flats, and prairie dog towns. No known populations of the species occur within the latilong (15D; Montana Natural Heritage Database). Thus, no impacts to this species would be expected to occur as a result of either alternative.

3.2.2.3 Raptors (Issue 1.5.6)

Several forest-using raptor species occur in the area, including bald eagles (previously described), Cooper's hawks, northern goshawks, merlin, northern harriers, and red-tailed hawks (Montana Natural Heritage Database). During field work, 4 potential raptor nests were discovered, one north of Hwy. 200, and three in the SW1/4 of the section and south of the highway.

The nest north of the highway is placed prominently, 53 feet up in the fork of a 23 inch dbh ponderosa pine. The nest tree is located within 100 feet of natural prairie and is relatively unshaded. Based on the nest tree's location and the amount of sunlight the nest receives, the nest was likely created by a red-tailed hawk.

Red-tailed hawks are a bird of relatively open country, with an extremely wide tolerance for habitat variation. Summer habitat for both sexes is centered around upland forest and grass-dominated cover types. Preferred breeding forested habitats are typically those with open rather than closed forest structures; nests are selectively placed near the edges of dense stands (Johnsgard 1990). Red-tailed hawks favor patches of forest and grass dominated areas, forest edges, open forest, and savanna-like areas with scattered tall trees. Prey generally consist of rabbits and hares, ground squirrels, mice, and game birds (Johnsgard 1990).

The 3 nests located south of the highway are all located within 700 feet of each other, largely in small clumps of 7 to 12 inch dbh Douglas-fir or aspen. The nests are located in forks of each nest tree, and consist of small diameter sticks. Based on the nest locations and composition, they were likely created by either Sharp-shinned or Cooper's hawks.

Sharp-shinned and Cooper's hawks are both members of the *Accipiter* family. As such, they both possess short, rounded wings and long tails for high maneuverability in a forested environment. The *Accipiter* family is known for its construction of multiple, alternate nests within the nesting area (Reynolds , Reynolds et al. 1982, Reynolds 1988), and nest placement at the base of the live tree canopy. For food, sharp-shinned hawks prey largely on songbirds and small rodents, such as mice. Cooper's hawks will prey on songbirds, woodpeckers, and pine or red squirrels. Both *Accipiters* nest and forage in the forested environment (Johnsgard 1990).

Chapter 4 -- Environmental Consequences

Issue 1.5.4: Predicted effects on Threatened and Endangered species.

Bald Eagle

Alternative A--No Action

Direct and Indirect Effects
With no action, there would be no change from current conditions. Thus, there would be low risk of direct or indirect effects to bald eagles as a result of this alternative.

Cumulative Effects

With no action, there would be no change from current conditions. Thus, there would be low risk of cumulative effects to bald eagles as a result of this alternative.

Alternative B--Action Alternative

Direct and Indirect Effects

The project area is located within a 2.5 mile radius home range (MBEWG 1994) of a bald eagle nest. Within this area, the Montana Bald Eagle Management Plan requires that: (1) human activities be designed and regulated to minimize disturbance and conflicts with bald eagle key use areas; (2) cumulative effects from human activity should not decrease habitat suitability; and, among others, (3) habitat alterations be designed to ensure that prey base and important habitat components be maintained or enhanced. The proposed action would conduct a winter harvest for uneven-aged management of many of the proposed harvest units, whereby timber volume would be harvested from all age classes, while retaining representatives of all age classes. As a result, (1) the proposed harvest would minimize disturbance and conflicts with breeding season use of the area by bald eagles through harvest timing; (2) the proposed uneven-aged management would retain vegetative screening; and (3) important habitat attributes (e.g., perch trees) for bald eagles would be retained. Should an active bald eagle nest be located closer to the project area, a DNRC wildlife biologist would be contacted to determine additional mitigation measures. Due to the proposed action's uneven-aged management, harvest timing, and minimal effects that would likely occur to bald eagle habitat, there would be a low risk of direct and indirect effects to bald eagles as a result of the proposed action alternative.

Cumulative Effects

The project area was previously harvested between 1981 and 1983 under the Dry Gulch Timber Sale, in which 462 MBF were commercially thinned to release ponderosa pine and Douglas-fir in the 6 to 18 inch diameter class. Since the Dry Gulch Timber Sale, trees on the affected School Trust parcel have responded favorably to the treatment and produced suitable bald eagle perch trees throughout the parcel. The proposed action would harvest 500 MBF from many of the same stands that were entered during the Dry Gulch T.S., commercially thinning some stands, thinning all age classes in others, or converting ponderosa pine-Douglas-fir stands back to ponderosa pine stands in still others. Irregardless of the thinning method in the proposed action, many of the perch trees and much of the vegetative screening produced as a result of the Dry Gulch T. S. would be retained post-harvest. As a result, there would be low risk of cumulative effects to bald eagles as a result of the proposed action alternative.

Grizzly Bear

Alternative A--No Action

Direct and Indirect Effects

With no action, there would be no change from current conditions and access roads would not be gated and closed. Thus, there would be low risk of direct or indirect effects to grizzly bears as a result of this alternative.

Cumulative Effects

With no action, there would be no change from current conditions and open road density within a 5-mile radius of the project area would remain at approximately 1.41 miles of open road per square mile (simple linear calculation). Thus, there would be low risk of cumulative effects to grizzly bears as a result of this alternative.

Alternative B--Action Alternative

Direct and Indirect Effects

The proposed action would gate and lock 1.26 miles of road within the project area that would reduce open road density within the parcel from 4.6 miles of open road per square mile to 2.93 miles of open road per square mile (simple linear calculation), a 36% reduction in open road densities. Because Highway 200 runs through the project area, the proposed action would leave a visual screen along both sides of the highway that would be both aesthetically pleasing to passing motorists and provide cover for grizzly bears that may be in close proximity to the road. On the north side of the highway, the visual buffer along the proposed harvest units would leave approximately 85 ft^2 of basal area per acre, out of the 130 ft^2 per acre that is currently present within a buffer ranging from 100 to 330 feet off of the highway. Along the south side of the highway, the visual buffer along the proposed harvest units would leave approximately 85 ft^2 of basal area per acre, out of the 115 ft^2 per acre that is currently present within a buffer ranging from 80 to 250 feet off of the highway. Additionally, trees along the county road, west of the proposed West harvest unit, that would not be harvested under the proposed action would provide hiding cover and visual screening from the county road for grizzly bears until they are harvested under a future action. The proposed action would also reduce the likelihood of a human-grizzly bear conflict during the operation through implementation of a winter harvest. Such action would likely occur during the grizzly bear denning period. With the aforementioned mitigations, the Action Alternative would reduce open road densities, provided vegetative screening along Highway 200 and the county road, and reduce the likelihood of direct disturbance through implementation of a winter (i.e., denning season) harvest. Thus, there would be low risk of direct and indirect effects to grizzly bears as a result of the Action Alternative.

Cumulative Effects

The Action Alternative, through gating and locking 1.26 miles of road, would reduce open road densities from 1.41 to 1.4 miles of open road per square mile (simple linear calculation). Many of the >40,000 acres of private land within the cumulative effects analysis area have livestock, which can be an attractant for grizzly bears. Additionally, the nearly 11,000 acres of industrial timber ground have been logged in recent years and now provide an abundant supply of huckleberries, snowberries, and the like. All of which are preferred grizzly bear food items (Hewitt and Robbins 1996). Thus, with the abundant food to the north, and the lush riparian areas along, and feeding into the North Fork Blackfoot River, grizzly bears have ample reason to be in and around the project area. Through the mitigations listed in Direct and Indirect Effects, the Action Alternative would still maintain visual screening and hiding cover for grizzly bears along Highway 200 as well as riparian areas within the project area. Thus, there would be low risk of cumulative effects to grizzly bears as a result of the Action Alternative.

Issue 1.5.5: Predicted effects on Sensitive species.

Pileated Woodpecker

Alternative A--No Action

Direct and Indirect Effects

With no action, there would be no change from current conditions. Trees would continue to grow, albeit at a slower rate due to competition from other trees. As a result, achieving greater numbers of ≥18 inch dbh snags would take longer than in a thinned stand. There would be low risk of direct or indirect effects to pileated woodpeckers as a result of this alternative.

Cumulative Effects

With no action, there would be no change from current conditions. The Dry Gulch Timber Sale from the early 1980's thinned out stand conditions to promote a faster growth rate for the affected stands post-harvest. As a result of the Dry Gulch T. S., remnant ponderosa pine were able to attain diameters suitable for pileated woodpecker use faster than if the parcel had not been commercially thinned. Under the No Action Alternative, trees that have achieved suitable size for use by pileated woodpeckers may die and become suitable snags at a faster rate due to an increased likelihood of stand replacing fire from unthinned Douglas-fir. Thus, there would be low risk of cumulative effects to pileated woodpeckers as a result of this alternative.

Alternative B--Action Alternative

Direct and Indirect Effects

The proposed action would commercially thin or selectively harvest 500 MBF from 200 acres; uneven-aged management, overstory removal, or more traditional thinning would be employed, depending upon the proposed harvest unit. Resulting stand conditions would be more open, allowing for increased growth rates for remaining trees. In all but the Dryeast harvest unit, larger diameter ponderosa pine would be left that could serve as potential foraging and nesting sites, as well as potential large downed wood recruits in 75 to 125 years. The proposed action would reduce stocking levels, which would reduce the affected stands' susceptibility to insect infestation and a potential future food source for pileated woodpeckers. However, the proposed action would retain sufficient large diameter trees and would likely have low impact on local carpenter ant populations (a primary pileated woodpecker food source; (Torgersen and Bull 1995). Thus, there would be low risk of direct and indirect effects to pileated woodpeckers as a result of the Action Alternative.

Cumulative Effects

The Dry Gulch Timber Sale, from 1981 to 1983, commercially thinned 462 MBF from the project area, and subsequently released the remaining trees that ranged in diameter from 6 to 18 inches dbh. The previous action created the stand that currently exists and contains many ponderosa pine ≥15 inches dbh, which are preferred nesting and foraging trees for pileated woodpeckers. With the exception of the proposed 11 acre Dryeast harvest unit, many large diameter ponderosa pine would be retained in the proposed action. Additionally, where safety permits, many of the broken top snags created during the June 2001 snowfall would be retained and serve as potential foraging sites.

Within the 5,766 acre cumulative effects analysis area (a 1-mile radius surrounding the project area), the majority of the land (69%; 3,977 ac) is prairie, with the bulk of the forested land being located in sections 30 and 31, T15N R11W, and section 25, T15N R12W. From a landscape perspective, the forested portions of the project area are fragmented from the main forested patch in the aforementioned sections, existing in a matrix dominated by prairie. As such, the project area is more likely to serve as potential foraging habitat for pileated woodpeckers than as core nesting habitat (i.e., large, unfragmented forested patches). Thus, with retention of the recently created broken top snags, and larger diameter ponderosa pine throughout many of the proposed harvest units, there is low risk of cumulative effects to pileated woodpeckers as a result of the Action Alternative.

Flammulated Owl

Alternative A--No Action

Direct and Indirect Effects

With no action, Douglas-fir would continue to grow and become the dominant species within the project area. As a result, open ponderosa pine stands preferred for nesting by flammulated owls would be lost over time. Thus, there would be low to moderate risk of direct and indirect effects for flammulated owls as a result of the no action alternative.

Cumulative Effects

The no action alternative would allow the continued encroachment of Douglas-fir within the project area, in stands not entered during the Dry Gulch Timber Sale of the early 1980s. The aforementioned harvest created stands of larger diameter ponderosa pine and Douglas-fir. The presence of recently created and abundant (>3 snags per acre) broken top snags in the proposed Secol harvest unit would provide ideal substrate in an additional 5 years for potential flammulated owl nests, provided northern flickers excavate cavities. Thus, there would be low risk of cumulative effects to flammulated owls as a result of the no action alternative.

Alternative B--Action Alternative

Direct and Indirect Effects

The proposed action would reduce the presence of Douglas-fir in the project area, while retaining larger diameter ponderosa pine. Flammulated owls prefer ponderosa pine and Douglas-fir stands with at least 2 canopy layers (McCallum 1994). Through the proposed action, the larger diameter ponderosa pine that would be retained would provide ample opportunities for northern flickers to create future nesting cavities for flammulated owls. Such action would create a future stand in 20 to 30 years that would have emergent trees and snags (i.e., the retained overstory ponderosa pine) and a relatively open stand of Douglas-fir, and ponderosa pine; conditions that would be conducive to nesting by flammulated owls. In itself, the proposed action would have low risk of direct and indirect effects to flammulated owls because it would create a more open stand structure that is preferred by this species (McCallum 1994).

Cumulative Effects

The proposed action would reduce the presence of Douglas-fir within the project area, while reducing canopy cover and increasing the dominance of larger diameter ponderosa pine. Such action would likely create additional preferred flammulated owl nesting habitat within the project area. In addition to existing conditions within a 1-mile radius of the project area, the proposed action would add to the approximately 1,789 acres of potential flammulated owl habitat. Within the project area, the Dry Gulch Timber Sale of the early 1980s produced a more uniform canopy of ponderosa pine and Douglas-fir, which if thinned, could yield preferred flammulated owl habitat through the construction of a multi-storied ponderosa pine-Douglas-fir stand in approximately 30 years. Within the proposed Secol harvest unit, and its proposed reclamation for ponderosa pine, the newly created broken top snags would provide ample opportunities for future nesting habitat, provided there would be sufficient excavation by northern flickers. Thus, the proposed action would likely produce conditions suitable for nesting by flammulated owls within 10 to 30 years, depending on the particular stand, and would likely add to the amount of flammulated owl habitat currently available in the cumulative effects analysis area. Therefore, the risk of cumulative effects to flammulated owls from the proposed action would be low.

Columbian Sharp-tailed Grouse

Alternative A--No Action

Direct and Indirect Effects

Under the no action alternative, there would be no change from current conditions. Thus, there would be low risk of direct or indirect effects to this species as a result of this alternative.

Cumulative Effects

With no action, there would be no change from current conditions. Thus, there would be low risk of cumulative effects to this species as a result of this alternative.

Alternative B--Action Alternative

Direct and Indirect Effects

Several pockets of aspen that surround Evans Lake and several ephemeral ponds occur throughout the project area and could serve as potential wintering habitat. However, because these aspen patches are in close proximity to conifer stands, the aspen's value for wintering habitat is degraded due to increased likelihood of predation (B. Deeble, National Wildlife Federation, pers. comm., May 2003). While the proposed action would harvest some conifers in close proximity to the aspen patches, the action would not likely reduce the threat of predation from avian predators to Columbian sharp-tailed grouse because the proposed action would mainly reduce tree densities in the conifer stands. Thus, there would likely be negligible change from current conditions for this species as a result of the proposed action. Therefore, there would be low risk of direct and indirect effects to this species as a result of the proposed action alternative.

Cumulative Effects

Between 1981 and 1983, the Dry Gulch Timber Sale harvested timber within the project area similar to the proposed action alternative, and likely had similar direct and indirect effects for Columbian sharp-tailed grouse. However, cattle grazing on adjacent private lands to the south of the project area likely have decreased breeding and wintering habitat suitability for this species (Deeble 1996). Currently, this species has been known to winter on U. S. Fish and Wildlife Service land east of Browns Lake, however, wintering habitat also likely exists along the North Fork Blackfoot River to the south of the project area. Thus, because quality of the potential wintering habitat within the project area would not likely change from current conditions as a result of the proposed action (see Direct and Indirect Effects), and the availability of other habitat in closer proximity to their breeding grounds near Browns Lake, there would be low risk of cumulative effects as a result of the Action Alternative.

Issue 1.5.6: Predicted effects on diurnal raptors.

Red-tailed Hawk

Alternative A--No Action

Direct and Indirect Effects
Under the no action alternative, there would be no change from current conditions. Thus, there would be low risk of direct or indirect effects to this species as a result of this alternative.

Cumulative Effects
With no action, there would be no change from current conditions. Thus, there would be low risk of cumulative effects to this species as a result of this alternative.

Alternative B--Action Alternative

Direct and Indirect Effects
Red-tailed hawks are sensitive to human disturbance during the breeding season and are known to change their home ranges to accommodate the disturbance (Andersen et al. 1990). The proposed action would not create disturbance around the suspected red-tailed hawk nest during the breeding season because a winter harvest would be a requirement of the sale. Although this species is known to nest in open country (Andersen et al. 1990, Johnsgard 1990), the proposed action would retain the nest tree as well as ≥6 larger diameter ponderosa pine and Douglas-fir that are in close proximity to the nest tree, to serve as screening cover and perch trees for future fledglings. Because red-tailed hawks have a wide tolerance for habitat variation (Johnsgard 1990), proposed harvest timing, and the aforementioned mitigations, there would be low risk of direct and indirect effects to red-tailed hawks as a result of the Action Alternative. Additionally, through the proposed harvest timing and mitigations, the Action Alternative would avoid conflicts with protections afforded this species under the Migratory Bird Treaty Act because the proposed harvest would not occur when the species is likely to be present, and the nest tree would be retained.

Cumulative Effects
The Dry Gulch Timber Sale from the early 1980's likely assisted with the circumstances that produced a suitable site in which red-tailed hawks could nest. Through the prior action, tree densities were reduced that enabled the remaining trees to grow at a more rapid rate and attain a size that would be desirable for nesting, and created the forest structure that enabled red-tailed hawks to gain access to some forest-dwelling prey, as well as their open-country prey. The proposed action may have some short-term (5 to 10 years) reductions in available (i.e., accessible and abundant) forest-dwelling prey, such as pine squirrels; however, due to the red-tailed hawk's broad niche and wide prey base, prey from the surrounding prairie lands would likely supplement potential decreases in forest prey. Thus, there would be low risk of cumulative effects from the Action Alternative to red-tailed hawks.

Accipiter hawks

Alternative A--No Action

Direct and Indirect Effects
Under the no action alternative, there would be no change from current conditions. Thus, there would be low risk of direct or indirect effects to this species as a result of this alternative.

Cumulative Effects

With no action, there would be no change from current conditions. Thus, there would be low risk of cumulative effects to this species as a result of this alternative.

Alternative B--Action Alternative

Direct and Indirect Effects

Both sharp-shinned and Cooper's hawks are highly maneuverable, forest-dwelling raptors that use ambush hunting techniques to obtain prey (Reynolds , Johnsgard 1990). As such, the proposed action would reduce tree densities within the project area. For these *Accipiters*, who use their maneuverability as an advantage to obtain prey, the stand density reductions could potentially affect their ability to obtain avian prey. Additionally, there may be temporary reductions (5 to 10 years) in prey, such as song birds, while understory vegetation recovers from the proposed action. However, bird species associated with Evans Lake and the potholes that are scattered throughout the project area would likely be unaffected by the proposed action.

The landscape surrounding the three affected nests would not see increases in habitat fragmentation as a result of the proposed action; however, resulting stand structures would likely affect the overall landscape nesting suitability for sharp-shinned and Cooper's hawks (after McGrath et al. *in press*). For the largest of the three North American *Accipiters*, northern goshawks appear to prefer specific stand structures (after (Oliver and Larson 1996) at varying distances to their nests. Cooper's and sharp-shinned hawks may have similar habitat affinities when selecting their nest sites. McGrath et al. (*in press*) postulated that the associated stand structures and landscape compositions may relate to predation avoidance, prey availability, and nesting microclimate. Through commercially thinning the landscape surrounding the affected nests, the Action Alternative would at least temporarily (approximately 10 to 15 years) alter the stand structures that may affect predation rates, prey availability, and nesting microclimate for these species. To partially mitigate for microclimatic changes surrounding the nests, stand structures within approximately 0.1 acre surrounding each nest would not be altered at this time, while retaining the naturally clumpy tree distribution surrounding the nest structures. Given the mitigations surrounding the nest trees, there would still be temporary (approximately 10 to 15 years) low to moderate risk of direct and indirect effects to *Accipiter* hawks as a result of the alterations to stand structures in the surrounding landscape, as proposed in the Action Alternative.

Cumulative Effects

Cooper's and sharp-shinned hawks are generally associated with forested habitats, with home ranges typically <1000 acres (Johnsgard 1990). Looking at the forest distribution within the larger landscape (Fig. 1), the affected nests are likely near the southern end of the breeding pair's home range, assuming nearly exclusive forest use by the pair. Based on forest distribution, the affected nesting pair would likely utilize the forested area within the project area, but also that to the north, south, and east, on Plum Creek and private lands. As described in Direct and Indirect Effects, the proposed action could temporarily alter stand structures at a landscape level that would effect this landscape's suitability for nesting by sharp-shinned or Cooper's hawks. Such effects may cause temporary abandonment of the territory by the pair, or may cause the pair to relocate to a nearby location. The Dry Gulch Timber Sale of the early 1980's likely had similar effects if this territory were occupied at that time. Actions such as those in the 1980's and the proposed action likely simulate the effects of natural fire in the landscape. As fire pulses through the landscape periodically over time, suitable nesting habitat is temporarily made unsuitable. This dynamic would occur across the landscape, causing spatial shifting of suitable nesting habitat and a temporary displacement of breeding pairs (McComb et al. 2002). Thus, while the proposed action would likely reduce a limited area's nesting suitability for sharp-shinned and Cooper's hawks, the effect would be temporary in nature, as evidenced by the similar action in the Dry Gulch Timber Sale. Therefore, the Action Alternative would have a low to moderate risk of cumulative effects for *Accipiter* hawks, with the moderate risk level being associated with individual birds.

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ATTACHMENT C

WATERSHED

AND

SOILS

Renee Hanna
Hydrologist
5/16/03

Evans Lake Timber Sale

Chapter 1- Purpose and Need

1.5-Issues and Concerns

1.51 The proposed activities could increase water yield and impact water quality.

1.52 Management activities in the proposed project area could result in compaction and displacement of surface soils.

1.53 An increase in the spread of noxious weeds could occur as a result of harvest activity.

Chapter 2- Alternatives Including the Proposed Action

Fisheries

Issue: **The proposed management activity could impact fisheries habitat.** There are no live streams in the project area. The only water present in the project area consists of pothole wetlands and ephemeral springs. As a result of no possible impacts to fisheries, this issue will not be discussed any further.

Chapter 3- Affected Environment

3.2 General Description of Area

3.2.1 Watershed-Existing Conditions of Water Quality

3.2.1.1 Water Quality

Description of Analysis Area
The Evans Lake timber sale is located in Section 36, T15N, R12W. The project area is situated on glacial outwash topography with low to moderate slopes of 0-45%. The draws within the within the project area are dry draws with no defined stream channel, but do carry some ephemeral flow during spring runoff. The project area contains several pothole wetlands that retain water during spring runoff and wet periods. There are two ephemeral springs in the SE ¼ of the NE ¼ of the project area, one in the NE ¼ of the SW ¼ of Section 36. The pothole wetlands and springs dry up in the summer, however, during wet periods and rain events they do have potential to hold water.

Warren Creek runs through the NW ¼ of the NW ¼, but the harvest units are all located outside the Warren Creek watershed. Evans Lake is located in the SW ¼ of the SW ¼, but outside the project area.

Water Quality

There has been previous harvest in the analysis area during the early 1980's, however, signs of these activities are minimal. Existing road miles within the project area are moderate with approximately 3.5 miles in Section 36. Approximately half of these road miles are two-track roads, which are vegetated, but have limited drainage features. There is limited rutting on the road surface and some collection of water in low spots as a result of spring runoff was observed. There is no evidence of direct delivery of sediment to any of the ephemeral springs or pothole wetland areas. There is an existing two-track road in NW ¼ of the SW ¼ of the section that runs along the wetland. This road has a limited vegetative buffer, however, no direct delivery of sediment was observed.

Regulatory Framework

Evans Lake and the surrounding pothole wetlands are considered classified B-1 in the Montana Surface Water Quality Standards. The B-1 classification is for waters that are considered suitable for domestic use after conventional treatment, as well as recreation, swimming and bathing. They are also suitable for growth and propagation of salmonid fish and other associated aquatic life, waterfowl and furbearers, and agricultural and industrial water supplies. Another criteria for a B-1 classification is; no increases are allowed above naturally occurring concentrations of sediment, settleable solids, oils or floating solids, which will or are likely to create a nuisance or ender the waters harmful, detrimental or injurious to public health, recreation, safety, welfare, livestock, wild animals, birds, fish, or other wildlife. Evans Lake was not identified as a water quality limited water body by the 1996 or 2000 update to the Montana 303(d) list.

3.2.1.2 Soils-Existing Conditions (Issue 1.5.2)

The project area is located on glacial outwash topography with low to moderate slopes of varied soil types. The soils in the project area are a combination of Perma Stony Loam 15-35% slopes, Wildgen Cool-Yreka Warm Gravelly Loams, 2-8% and 8-25% slopes, Hoyt Loams 15-35% slopes, Quigley-Straw Water Complex 8-25% slopes and Shawmut-Winspect Water Complex 2-8 and 8-25% slopes. These soils are well-drained very gravelly loams to silt loam textures with limited areas of somewhat poorly drained salty, clay loam soils associated with the pothole lakes in this section.

Perma Series-well drained soils derived from alluvium, colluvium and glacial outwash. They have a gravelly loam surface layer of 0-5" (15-60% rock, 7-20% clay) and a loam to sandy loam subsoil > 40".

WildgenSseries-well drained soils with an alpine till parent material. They have a gravelly loam surface layer of 0-8" (15-35% rock, 15-25% clay) and a loam to sandy loam subsoil, > 40".

Hoyt Series-well drained and have a colluvium parent material, derived from igneous rock and till. These soils have a loam surface layer 0-6" (0-15% rock, 18-27% clay) and a gravely loam subsoil, > 40".

Shawmut Series-well drained soils that have an Alpine till parent material. They have a gravelly loam surface layer of 0-6" (15-80% rock, 15-27% clay), and a sandy clay loam to clay loam subsoil, > 40".

Winspect Series- well drained soils with an alluvium and alpine till parent material. This series has a gravelly loam surface layer of 0-5" (15-35% rock, 20-25% clay) and a very gravelly loam subsoil, > 40".

Quigley Series-well drained soils with an alluvium and alpine till parent material. Quigley soils have a loam surface layer of 0-3" (0-35% rock, 20-27% clay) and a loam to clay loam subsoil, > 40".

Straw Series- well drained soils with a calcareous alluvium and alpine till parent material. These soils have a loam surface layer of 0-10"(0-10% rock, 20-27% clay) and a loam subsoil, > 40".

Soil Interpretations for the Evans Lake Project Area

Figure 1.

Map Unit	Parent Material	Soil Moisture Water Holding Capacity	Compaction Hazard	Erosion Hazard	Displacement Hazard	Notes
63E Quigley Straw-Water Complex 8-25% slopes	Alpine till	WHC Quiqley 7.1" Straw 10.1"	Moderate-High	Low	Mod-High	
241E Perma Stony Loam 15-25% slopes	Alluvium, colluvium and glacial outwash	WHC 3.5"	Moderate	Low-Moderate	Low-Moderate	
371C Wildgen Cool-Yreka Warm, Gravelly Loams 2-8% slopes	Alpine till	WHC Wildgen 5.2" Yreka 5.6"	Moderate	Low	Moderate	
371E Wildgen Cool-Yreka Warm, Gravelly Loams 8-25% slopes	Alpine till	WHC Wildgen 5.2" Yreka 5.6"	Moderate	Low	Moderate	
452E Hoyt Loams 15-25% slopes	Colluvium derived from igneous	WHC 7.7"	Moderate-High	Low-Moderate	Low-Moderate	

	rock and till					
651C Shawmut-Winspect Water Complex 2-8% slopes	Alpine till	WHC Shawmut 4.0” Winspect 6.1”	Shawmut-Low Winspect-Moderate	Low	Shawmut-Low Winspect Low-Moderate	Low spots remain wet later in the year, more sensitive to rutting and displacement
651E Shawmut-Winspect Water Complex 8-25% slopes	Alpine till	WHC Shawmut 4.0” Winspect 6.1”	Shawmut-Low Winspect-Moderate	Low	Shawmut-Low Winspect Low-Moderate	

3.2.1.2 Existing Noxious Weeds (Issue 1.53)

Noxious weeds, mainly knapweed (Centaurea maculosa) and spots of thistle (Cirsium arvense) and common hound’s tongue (Cynoglossum officinale) occur within the project area and on roadside edges within the State section. County roads have existing knapweed, common hound’s tongue and thistle. Moist areas have more competitive vegetation and fewer weed occurrences.
South slopes are droughty and at higher risk of weed establishment.

Chapter 4- Environmental Impacts

Issue (1.5.1): The proposed activities could increase water yield and impact water quality.

No Action Alternative:
Under the No Action Alternative no direct, indirect or cumulative effects would occur.

Action Alternative
Under the Action Alternative direct, indirect and cumulative impacts would be minimal. The proposed project would have little or no effect on water yield, only slightly departing from natural conditions. There will be sufficient canopy cover remaining, consisting of live trees occupying the site, allowing for interception and infiltration, resulting in limited potential for increased water yields and off site delivery. There are two wetland areas and three springs located in the project area that will be protected by equipment restriction zones and a sufficient vegetated filtration buffer to minimize impacts to water quality.

All existing roads in the proposed project were evaluated by a DNRC Hydrologist for past and potential impacts. Some roads in the project area do not meet BMP standards and lack sufficient drainage features. Approximately .25 miles of new road would be constructed and .50 miles of road would be improved to meet BMP standards, which would require drain dip installation in specified sections of road. There are no roads in the project area that directly deliver sediment to any body of water.

The proposed .25 miles of new road construction is located in the SW ¼ of section 36. This new road would eliminate the use of the existing road, which is located approximately 10-20 ft from the wetland area. The old road would be slashed to prevent use and add an additional sediment filtration buffer.

Issue (1.5.2): Management activities in the proposed project area could result in compaction and displacement of surface soils.

No Action Alternative
Under the No Action Alternative there would be no potential for direct, indirect or cumulative effects to soil compaction or displacement.

Action Alternative
Under the Action Alternative the risk to direct, indirect and cumulative effects would be low. The primary risks to long-term soil productivity are compaction and displacement of surface soils by equipment operation and road construction. During timber harvest, equipment operations on wet sites and sensitive soils can result in soil compaction, rutting, displacement and erosion. Potential effects are a reduction in long-term soil productivity, regeneration potential, as well as impacts to course woody debris distribution and nutrient cycling.

To reduce the risk of compaction and displacement, the period of operation would be limited to winter activities (frozen ground and/or sufficient snow accumulation of 12-18"), when ground conditions are less susceptible to compaction and displacement. Springs and wet areas will be marked as equipment restriction areas. Sensitive soils that remain wet late into the spring will have a shorter season of use. The Forest Officer prior to any harvest operations would approve the skid trail plan and design. There will be no skidding across draws, except those designated trails that have been approved by the Forest Officer as part of the skid trail plan and design. Any rutting on the road that may occur during harvest operations would be bladed after harvest operations are completed.

Harvest Design Mitigation Measures

- Comply with Streamside Management Zone Law and Rules.
- Cumulative impacts would be controlled by limiting the total soil disturbance area in a unit to 15% or less. Timber harvest units will be designed to minimize overland flow, minimize soil erosion and displacement, and maintain water quality. This would be accomplished by using existing trails, skid trail planning and design and maintaining nutrient cycling by retaining woody debris and foliage.
- Log landings and skidding patterns will be designed to best fit the terrain and limit area affected.
- The period of operation on sensitive soils will be limited to winter activities (frozen ground and/or sufficient snow accumulation of 12-18"),

when ground conditions are less susceptible to erosion, sedimentation and displacement.

- On wet sites, steep slopes, complex terrain and along incised draws, equipment restriction zones will be located as needed to protect soils and wet sites from erosion.
- Retain 5-10 tons of course woody debris greater than 3" diameter on site following harvest for nutrient cycling.
- Surface drainage will be installed on skid trails and landings where appropriate.
- The Forest Officer prior to harvest will approve the skid trail plan.

Roads

- Limit hauling to periods when roads are dry or frozen, and suspend hauling when conditions are wet, which could result in rutting and damage to drainage features.
- Existing roads have been inventoried and adequate drainage would be installed, to minimize water erosion and maintain water quality.
- New road construction would meet BMP standards.

Slash Disposal

• Harvest and slash disposal treatments would retain 5-10 tons/acre of large woody debris and a majority of fine slash well distributed for nutrient cycling and long-term productivity.

• Slash disposal can be accomplished by in-woods processing or return slash skidding concurrent with harvest operations. Some slash would be spread on trails.

Issue 1.53: An increase in the spread of noxious weeds could occur as a result of harvest activity.

No Action Alternative

With no-action, noxious weeds would continue to spread along existing roads and into drier vegetation types, mainly south slopes.

Action Alternative

As a result of the proposed timber harvest ground disturbance would be low to moderate and the risk of additional spreading of weeds would be low. The action alternative objective for weed management is to prevent new establishment of noxious weeds and control established populations along open roads. For this project an Integrated Weed Management (IWM) approach would be implemented that would include: prevention, revegetation and weed control measures for spot outbreaks, which are considered the most effective weed management treatments. The short-term effect would be to reduce existing noxious weed populations and increase native plants and seeded grasses. Where weeds are replaced with grasses, erosion would be reduced due to the improved plant cover. Localized herbicide applications would be used, primarily along disturbed roadside edges and spot treatments of small infestations. To protect water quality, herbicide would not be applied where runoff could enter surface waters or riparian features.

Integrated Weed Management Mitigation's
To reduce current noxious weed infestations and limit the spread of weeds the following integrated weed management mitigation measures for prevention and control will be implemented:

* All road construction and harvest equipment will be cleaned of plant parts, mud and weed seed to prevent the introduction of additional noxious weeds. Equipment will be subject to inspection by the forest officer prior to moving on site.

* Promptly revegetate all newly disturbed soils on road cuts and fills with site-adapted grasses (including native species) to reduce weed encroachment and stabilize roads from erosion. For grass seeding to be effective it is important to complete seeding concurrent with road construction.

* Weed treatment measures include herbicide applications along portions of project roads and treatment of spot outbreaks of noxious weeds as designated by the Forest officer. Any restricted use herbicide treatments will be implemented by a certified applicator according to herbicide label directions.

ATTACHMENT D

INITIAL PROPOSAL

AND

PUBLIC NOTICE

Initial Proposal
Evans Lake Timber Sale
October 18, 1999

The Montana Department of Natural Resources and Conservation, Clearwater Unit, proposes a timber sale in the north half and southwest quarter of Section 36, T15N R12W.

The primary objective of the proposed action is the production of income for the School Trust Fund, approximately $60,000 (using an estimated stumpage rate of $200/MBF). In keeping with the DNRC's State Forest Management Plan, the secondary objective of the proposed action will be to alleviate those existing stand conditions which are a result of wildfire suppression, thus restoring vigor. Such conditions include but are not limited to - overstocked stands with abnormally high percentages of Douglas-fir, and the presence of insects and diseases which would not be as threatening to forest health had fire been allowed to play its natural role in stand development.

Selective harvesting, favoring Ponderosa Pine and Western Larch as leave trees would be the harvest method used throughout the proposal area.

Approximately 300 thousand board feet will be harvested by tractor from 170.5 acres of forested land. No new roads would be constructed and steps would be taken to repair any damage done to existing roads during implementation of the proposal in 2002.

In preparation for the timber sale, specialists such as wildlife biologists, hydrologists, soil scientists, and archaeologists, as well as neighboring landowners will be consulted. Preliminary areas of concern which need more analysis are wildlife travel routes and cover values, and important view angles and visual areas. The DNRC is looking for input that will identify currently unaddressed concerns and issues.

The Department of Natural Resources and Conservation invites comments and suggestions concerning this proposal from all interested parties. Please respond by December 1, 1999.

Please write to:

Ursula Heron
Montana DNRC
Clearwater Unit
Box 388
Greenough, MT 59836

Phone: 244-5857

-Public Notice-
Department of Natural Resources and Conservation
Timber Sale

The Montana Department of Natural Resources and Conservation, Clearwater Unit, is beginning initial planning and analysis for the proposed Evans Lake timber sale located in the north half and southwest quarter of Section 36, T15N R12W. The Department would like public input regarding the proposal to harvest timber on these lands. Those interested should address written comments to : Ursula Heron, Montana DNRC, Clearwater Unit, Box 388, Greenough, MT 59836, Phone 244-5857. Comments must be received by December 1, 1999.

Implementation of the timber sale is scheduled for 2002. Selective harvesting, favoring healthy Ponderosa Pine and Western Larch as leave trees will be the method used to remove approximately 300 MBF from 170.5 acres of mature and overcrowded timber at high risk to insects and disease.

This timber sale is part of a program managing forested, State Trust Land for revenue to support public schools.

ATTACHMENT E

MITIGATIONS

BY

RESOURCE

MITIGATIONS BY RESOURCE

Recommended water quality mitigation and watershed improvement measures:

1. Implement SFLMP BMPs as the minimum standard for all operations associated with the proposed timber sale.
2. Plan, design and improve existing road systems to meet long-term access needs and to fully comply with BMPs.
3. Provide for needed road surface drainage on all temporary or abandoned roads that will not require periodic maintenance.
4. Protect ephemeral draws, springs and other wet areas with marked equipment restriction zones. If absolutely necessary, designate locations for skid trail crossings. Use designated crossings only under dry or frozen conditions.

To reduce current noxious weed infestations and limit the spread of weeds the following integrated weed management mitigation measures of prevention and control will be implemented:

1. All road construction and harvest equipment will be cleaned of plant parts, mud and weed seed to prevent the introduction of noxious weeds. Equipment will be subject to inspection by forest officer prior to moving on site.
2. Revegetate all newly disturbed soils on road cuts and fills promptly with site adapted grasses (including native species) to reduce weed encroachment and stabilize roads from erosion. For grass seeding to be effective it is important to complete seeding concurrent with road construction.
3. Weed treatment measures include herbicide applications along portions of project roads and accessible sites with a priority on spot outbreaks of noxious weeds and as designated by the Forest officer. Any herbicide treatments will be implemented by a certified applicator according to herbicide label directions in accordance with applicable laws and rules.
4. DNRC will monitor the project area. If new infestations of noxious weeds are noted, a weed management plan will be developed and implemented and coordinated with the lessee efforts.

To reduce effects upon wildlife, the following mitigation measures will be implemented:

1. If any endangered or threatened species were encountered during project planning or implementation within the analysis area, all project-related activities may cease and a DNRC wildlife biologist would be informed immediately. Additional habitat protection measures would be implemented as appropriate (no disturbance during red tailed hawk breeding season).
2. If active nests of an owl or other raptor were located, activities in the adjacent portion of the project area would stop until the biologist and the sale administrator could visit the site. Nest trees and all overstory trees in a 50 foot radius would be retained. Timing restrictions or nest stand protections will be implemented as well.
3. Prior to logging, the DNRC (wildlife biologist) would confirm the current wolf and bald eagle nest status in the vicinity with the U.S. Fish and Wildlife Service, Helena.
4. Gates installed by proposed project will be closed and locked when not in use (1.26 miles).

Mitigations common to all endangered and threatened species (plant or animal):

1. If any endangered or threatened species are encountered during project planning or implementation, all project-related activities would cease and the DNRC wildlife biologist or MNHP specialist would be informed immediately. Additional habitat protection measures may be designed and would be implemented as appropriate.

Mitigations for Grizzly Bears:

1. Purchaser and all contractors will be made aware that Grizzly Bears are common on this section.
2. Grizzly bears are known to be attracted to oil based products. Purchaser and operator are reminded of this and that Grizzly bears will rip off oil filters, tear off hoses, and chew seats.

MITIGATIONS BY RESOURCE

3. Purchaser and/or the contractor are reminded that if they camp on the job site, all food should be stored inside vehicles. If they do not choose to stay on site, lunches etc. will be kept inside vehicles. Work sites and camping sites will be kept clean.

4. Sale has been developed with a corridor of trees providing hiding cover adjacent to highway 200. Harvest seasons are generally during the winter (during the normal denning season) to decrease the possibility of Grizzly and human Interaction.

Mitigations for soil related issues:

1. Limit equipment operations to periods when soils are relatively dry,(less than 20%), frozen or snow covered to minimize soil compaction and rutting, and maintain drainage features. Check soil moisture conditions prior to equipment start-up.

2. The logger and sale administrator will agree to a general skidding plan prior to equipment operations. Skid trail planning would identify which existing trails to use, and what additional trails are needed. Trails that do not comply with BMP's (i.e. draw bottom trails) would not be used and may be closed with additional drainage installed where needed or grass seeded to stabilize the site and control erosion.

3. Tractor skidding should be limited to slopes less than 40%. Short steep slopes in the SE ¼ of the section may require a combination of mitigation measures based on site review, such as adverse skidding to ridge or winch line skidding from more moderate slopes.

4. Slash Disposal- Limit disturbance and scarification to 30-40% of harvest units. Accept disturbance incurred during skidding operations to provide adequate scarification for regeneration.

5. Retain 5 to 10 tons large woody debris and all fine litter feasible following harvest. Mitigations options to maintain adequate large woody debris and foliage are:

   1) log length harvest and treat slash on site with excavator pile burning,
   2) use in woods processing equipment that leaves slash on site,
   3) for whole tree harvest, return skid slash and excavator pile distributed within the harvest area, or
   4) cut off tops from every third bundle of logs so that tops are dispersed as skidding progresses.

6. Install adequate road drainage to control erosion and comply with BMP's and maintain drainage features concurrent with hauling operations. If minor cutslope or fillslope slumps occur, they would be stabilized within the course of the harvest project to control erosion. Temporary roads and eroded segments would be stabilized.

7. Require purchaser to seed disturbed soil on reconstruction sites and disturbed soils with site adapted grasses to reduce weed encroachment and stabilize roads from erosion.

Mitigations for cultural resources and human developments:

1. Should cultural resources be identified, adverse impacts will be mitigated by project redesign or abandonment. All cambium scarred trees will be preserved.

2. While operating within the gross project area the DNRC, the purchaser, their contractors, sub-contractors, or employees of any of them identifies a cultural resource operations shall be suspended until further Investigation takes place.

3. Upon discovery, the Forest Officer shall notify the following as applicable:

   1) The County coroner.
   2) The DNRC archeologist.
   3) State Historic Preservation Office.
   4) Appropriate Native American tribe.

Mitigations for Fire Ecology and Forest Health and Vigor

1. Reserve trees should be the healthiest, largest, and fastest growing members of long-lived seral species. Other trees may be left for wildlife, visual, or hydrological reasons.

2. Development of units should be done to promote the reintroduction of fire (prescribed fire) into the project area. Units should be designed to assist in the holding of prescribed burning.